2003 RESULTS

ANNUAL INSPECTION REPORT ON MARINE FINFISH AQUACULTURE SITES

JOINT REPORT OF

Ministry of Agriculture, Food and Fisheries

AND

Ministry of Water, Land and Air Protection

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1. EXECUTIVE SUMMARY

Salmon aquaculture factors significantly in the British Columbia economy, and is estimated to contribute to more than 3,500 direct and indirect jobs. Ninety percent of those jobs are in coastal communities, and 50 percent of those jobs are for women and First Nations. These are full-time, year-round jobs.

The success of the aquaculture industry depends on farms being environmentally sustainable and socially acceptable, as well as economically viable. Government's role is to ensure that the aquaculture industry meets these objectives. Government sets the terms and regulates the activities of farms licensed by the province.

The Ministry of Agriculture, Food and Fisheries (MAFF) is responsible for adjudicating aquaculture applications and for issuing aquaculture licences under the provincial *Fisheries Act*. Aquaculture operations are subject to the conditions of this act, and other provincial legislation, including: the *Aquaculture Regulation*, the *Waste Management Act*, the *Finfish Aquaculture Waste Control Regulation*, the *Water Act*, the *Land Act*, the *Wildlife Act*, the *Right to Farm Act*, and other relevant provincial, municipal and federal legislation.

The development of the 2002 joint agency Service Agreement (see Appendices 1, 12) between the Ministry of Water, Land and Air Protection (MWLAP), Land and Water BC (LWBC), and the Ministry of Sustainable Resource Management (MSRM), and MAFF, coordinates responsibilities amongst the provincial agencies to reduce duplication of effort, increase efficiencies, and demonstrate an accountable compliance and enforcement regime. Under this Service Agreement, MAFF Inspection staff are responsible for assessing compliance of the industry. "Compliance" activities include awareness, education, monitoring, and inspection activities. "Enforcement" activities are carried out by MWLAP, and include verifying and substantiating alleged offences and recommending and implementing necessary enforcement responses.

This year's report marks the fourth year of publication, and documents the status of compliance for marine finfish aquaculture sites for the inspections conducted during the 2003 cycle. The 2003 cycle marked the first year where the joint agency Service Agreement was considered fully implemented, and MAFF Inspection staff assessed compliance at all active farm sites on behalf of all agreement partners.

Inspection Activities and Results:

Regular inspections were carried out on farm sites by provincial inspections staff in order to ensure compliance with the relevant standards and regulatory requirements. During 2003, Inspections were conducted at

77 operational marine salmon farms, and in excess of 80 compliance points were assessed by Inspectors at each farm site.

Results for the 2003 inspection cycle found generally high compliance levels, and in most cases, an increase in compliance rates when compared to the 2002 inspection cycle. Areas of noted improvement over 2002 results included: marginal improvement in site configuration; biomass; tie-off points; boat docking signage; and out of water record requirements.

A higher percentage of non-compliance was evident for those issues assessed that fall under MWLAP's authority. It is believed that the reason for these higher non-compliance levels can be attributed to the fact that this was the first year where all active salmon farms in British Columbia were assessed for MWLAP-related issues (for 2002, approximately **28 percent** of active farm sites were assessed for MWLAP issues)

Areas of highest concern relative to MWLAP requirements included:

- For those sites that required water licences, failure to have water licences in place;
- Identified deficiencies with respect to the recent requirement for written Best Management Practices requirements;
- Maintenance records pertaining to domestic sewage treatment and disposal; and,
- To a lesser degree, fuel storage issues, primarily related to a company's failure to supply secondary containment for diesel tanks and fuel jerry cans.

Areas of highest concern relative to MAFF requirements included:

- Industry meeting the terms of their approved Management Plans with respect to site configuration issues (i.e., changing the cage size configuration);
- Biomass levels – while results highlight an improvement over 2002 results (86 percent compliance for 2003), securing compliance to approved biomass levels is considered of high importance to MAFF inspection officials;
- Best Management Practices (BMP) plans – deficiencies generally related to the company's failure to include a statement on plan that their BMP has been reviewed and endorsed by the operator and understood by farm site staff.

For both MWLAP and MAFF identified issues for 2003, agencies expect a much higher level of compliance for 2003, as a result of:

- With respect to BMPs for both MAFF and MWLAP, regulatory requirements are fairly new, and agencies recognize there may be a period of transition. Almost all sites have BMPs in place, but elements of those plans require more attention. It is anticipated companies will address any deficiencies in the coming year.

- With respect to site configuration, MAFF's current approval methods are lengthy, oftentimes for simple configuration changes that do not impact environmental objectives. MAFF recognizes the constraints within our approval methods and has now identified a means that allows industry to make the operational and necessary infrastructure changes on site that maintains our regulatory objectives, without the requirement of an involved and lengthy approval process. Details on these changes can be found in the main body of the report.

Other Activities and Results:

In 2003, a number of enforcement measures were implemented by both MAFF and MWLAP. A number of violation tickets and warnings were issued by MAFF, with some referrals made to MWLAP for further enforcement review and investigation. Specifics on enforcement activities are found in section 6-D of this report.

The 2003 report also highlights other activities undertaken by MWLAP and MAFF with respect to regulation of the salmon aquaculture industry, such as the dive audit program, and highlights some of the continuing enhancements to our compliance and enforcement regime.

Summary:

Overall inspection results for 2003 indicate, in general, high levels of compliance. Compliance and enforcement staff at both MAFF and MWLAP will continue to address identified issues, to ensure industry is meeting necessary requirements.

2. INDUSTRY BACKGROUND

Preliminary data for 2003 indicates that total landings and production for farmed salmon is estimated to be 61,000 tonnes. This is down from 85,400 tonnes reported in 2002. The 2003 volume equates to a landed value of $214 million and a wholesale value of $231 million.

The total landings and production levels for farmed finfish reflect production from a portion of the 129 licensed marine aquaculture farms in British Columbia.

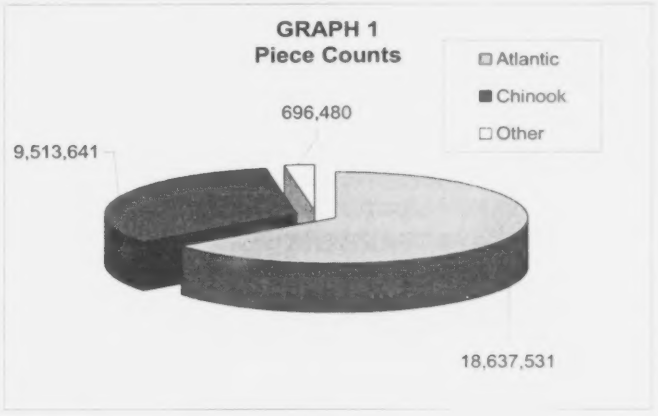
The map included as **Appendix 15** shows the distribution of salmon farms in British Columbia. Licensed sites are located in the following general areas of the province:

- Northern Vancouver Island – 41 sites;
- East Coast of Vancouver Island – 31 sites;
- Clayoquot Sound – 26 sites;
- Sechelt coastal waters – 10 sites;
- Mainland North of Cape Caution - 6 sites; and,
- the remaining 15 sites are scattered in various locations throughout British Columbia coastal waters

More detailed and site specific information can be found at the following link: http://www.fishwizard.com/aqua/index.asp.

At any given time a percentage of the licensed sites are being fallowed and are not operational. During the 2003 inspection cycle there were 77 operational sites inspected. The remainder were fallowed for this inspection cycle or were inoperative for other reasons at the time of inspection. "Fallow" sites are those finfish aquaculture farms that are inactive to allow the seabed to recover from any organic input prior to stocking the next production cycle, and ensure that operations are compliant with performance-based waste standards prescribed by MWLAP.

The following graph provides the breakdown for species currently being held on provincially licensed fish farms and reflects data that was collected by Inspectors during the 2003 inspection cycle.



3. MANDATE

A. MINISTRY OF AGRICULTURE, FOOD AND FISHERIES - LEGISLATIVE AND REGULATORY FRAMEWORK

Fisheries Act

The (BC) *Fisheries Act* provides the authority for MAFF to license aquaculture operations and regulate on-site farming activities. It also provides MAFF with the authority to set out licensing requirements such as species and production limits approved for each operation, and any additional licence terms and conditions that might be appropriate.

Aquaculture Regulation

The *Aquaculture Regulation* (**Appendix 5**), establishes regulatory requirements for specific on-site farm activities. These requirements in general identify a minimum standard with which farm operators must comply. The *Aquaculture Regulation* has undergone several changes, the most recent of which came into force on April 19, 2002.

Some of the more substantive changes include the introduction of:

- new powers allowing provincial Aquaculture Inspectors to have suspect net cages removed from the water;
- streamlined record keeping requirements for salmon farms;
- increased flexibility around diving requirements that link dive inspections more closely to higher-risk activities or events such as severe storms;
- requirements for farms to develop best management practices plans to guide routine activities that could lead to escapes; these replace similar but less effective requirements that were in the October 2000 amendments;
- changes to minimum net-strength standards, making them more consistent with other jurisdictions;
- a mandatory net-strength testing protocol, making net-strength requirements more enforceable; and
- increased emphasis on staff training, based on research that suggests human error is a leading cause of escapes.

B. MINISTRY OF WATER, LAND AND AIR PROTECTION - LEGISLATIVE AND REGULATORY FRAMEWORK

As noted earlier, the 2003 inspection cycle marked the first year during which MAFF inspectors conducted inspections at all active sites on behalf of MWLAP and MSRM in accordance with the Service Agreement.

MWLAP manages its compliance functions through staff associated with the Centre of Excellence for Aquaculture, Environmental Protection Division, Nanaimo and the Conservation Officer Service (COS).

MWLAP staff are involved in reviewing and auditing environmental monitoring data submitted by farms to ensure compliance with the environmental standards established in the *Finfish Aquaculture Waste Control Regulation*.

The focus of these inspections is directed at compliance with legislative and regulatory requirements under pertinent Acts and Regulations administered by MWLAP ensuring protection of the marine environment, fisheries, wildlife and human health.

Inspection activities were conducted to determine compliance with waste management requirements dealing with:

- domestic sewage;
- disposal and storage of fish mortalities (morts);
- transport, disposal and storage of blood water;
- disposal of refuse and other wastes;
- storage of hazardous materials; and,
- control of predators through the use of trapping and firearms.

There are a number of Acts and associated regulations regulating these issues:

- *Waste Management Act*
- *Finfish Aquaculture Waste Control Regulation*
- *Wildlife Act*
- *Water Act*
- *British Columbia Fire Code Regulation*

Waste Management Act

The *Waste Management Act* regulates the discharge of waste into the environment. Waste is defined as refuse, effluent, or air contaminant, capable of impacting human health, or the environment. The Act prohibits all waste discharges, except discharges conducted in accordance with a permit, approval, or an applicable regulation.

Possible waste discharges from salmon farms include sewage, fish faeces, fish feed, refuse, mortalities (dead fish), blood water, net cleaning waste, used disinfectant from footbaths, and fuel spills.

Finfish Aquaculture Waste Control Regulation

In September of 2002, the *Finfish Aquaculture Waste Control Regulation* (FAWCR) came into effect, replacing the *Aquaculture Waste Control Regulation*. The FAWCR requires all operating farm sites to be registered with MWLAP prior to stocking a facility with finfish.

Under the FAWCR farm operators are required to implement a Best Management Practices Plan to address the management of potentially harmful materials, promote the reduction of the discharge of wastes and pollutants, prevent the attraction of wildlife to feed, foodstuffs and mortalities, collect and dispose of mortalities in a timely fashion and in a manner to prevent spillage to the environment and minimize odours during storage and transportation.

The FAWCR establishes standards for the discharge of domestic sewage from farm sites and requires the operator to maintain records related to the construction, operation and maintenance of sewage treatment and disposal works.

The FAWCR also has provisions requiring environmental monitoring of sediments and reporting of monitoring results. It establishes chemical and biological standards for sediments at farm sites and defines when farms can be restocked based upon specific sediment conditions.

Wildlife Act

The *Wildlife Act* and the *Wildlife Act Commercial Activities Regulation* deal with trapping of fur bearing animals by licensed trappers and landowners. Fur bearing animals such as mink and river otter that become conditioned to feeding on farmed fish may be trapped by a licensed trapper during the open season or during closed season with authority from the Regional Wildlife Manager.

The *Wildlife Act* also regulates hunting and requires a person to hold a license when hunting wildlife.

Water Act

Agencies that share a role in administering and regulating activities related to the *Water Act* include MSRM, LWBC and MWLAP. MSRM is responsible for taking water resource issues into consideration during planning processes. LWBC is responsible for addressing compliance issues and MWLAP continues to undertake enforcement activities in consultation with LWBC.

The *Water Act* regulates the use of surface water for domestic, industrial and commercial use. A water licence is required in order to use surface water for domestic use in industrial settings such as marine fish farms.

British Columbia Fire Code, 1998

The BC Fire Code, administered by the BC Office of the Fire Commissioner, requires 110% containment for flammable or combustible liquids. The 110% containment requirement of the Code supports the *Waste Management Act* and its regulations in regards to spill prevention measures.

4. OVERVIEW OF LICENSING AND COMPLIANCE PROGRAM - 2003

The mandate of MAFF's Licensing and Compliance Branch recognizes the need for transparency and accountability. This mandate is met by the application of an integrated licensing and compliance program that applies personal and institutional independent decision-making principles to meet our public interest objectives.

A key function of the Licensing and Compliance Branch is the receipt and adjudication of commercial seafood applications and the issuance of licences and permits for the following industries:

- finfish aquaculture operations and hatcheries on both private and Crown land, including freshwater operations;
- shellfish aquaculture operations and hatcheries on both private and Crown land;
- commercial seafood activities, including fish buying stations, fish and marine plant processing and cold storage facilities, fish vendors and fish brokers;
- commercial harvest of marine plants and wild oysters.

A. LICENSING:

With respect to the review of new salmon farm licence applications, including relocations, the licensing procedure is thorough and complex. Considerable review is required to determine if the proponent's application meets identified policy criteria. General principles guiding the deliberations on salmon farm applications include: fairness, transparency, efficiency, and accountability.

The key values that are applied and considered by licensing officials include:

- protection of public health and safety;
- protection of the environment; and
- sustainable economic development.

The licensing policy, attached as ***Appendix 2*** to this report, provides the guidelines applied by the licensing authority in considering licence applications.

Inherent in the licensing decision review process is consideration of the past or demonstrable performance of the applicant which includes a review of compliance history. This includes consideration of the following factors:

- whether the applicant has had any previous convictions under relevant provincial legislation;
- whether the applicant has been the subject of any licence suspensions, cancellations or refusals to license pursuant to the BC *Fisheries Act*;
- whether there are any outstanding fees or royalties owed to the Crown with regard to current or previously held aquaculture licences; and,
- whether the applicant has the necessary experience and qualifications in the aquaculture sector.

Information and data collected during annual inspections, the dive audit program and through previous investigations provide licensing authorities with critical information relative to the past or demonstrable performance of the applicant.

The Licensing and Compliance Branch also has the responsibility to:

- monitor, inspect, and report on commercial fisheries and finfish and shellfish aquaculture industries.

An inter-agency Service Agreement, implemented in 2002, was developed to reduces duplication of effort, increases government efficiencies and demonstrates a strong, integrated and accountable compliance and enforcement regime.

The goals of the Service Agreement include:

- efficient use of staff resources to minimize duplication;
- one window approach to aquaculture development;
- high level of compliance;
- early intervention to avoid non-compliance;
- effective enforcement, successful prosecution and rehabilitation where required;
- public confidence; and,
- transparency.

The Service Agreement specifies that MAFF inspection staff serve as the lead in conducting all finfish and shellfish inspections, monitoring and audits on behalf of MWLAP, LWBC and MSRM. MWLAP enforcement staff serve as the investigative lead on all enforcement activities associated with formal prosecutions, court orders and administrative penalties for finfish and shellfish aquaculture on behalf of MAFF, LWBC and MSRM.

MWLAP continues to conduct environmental monitoring of benthic conditions at and near farm sites as part of its compliance program and to support collection of further scientific information that will be used to evaluate the effectiveness of the standards prescribed in the *Finfish Aquaculture Waste Control Regulation.*

A compliance matrix provides guidance to staff when addressing non-compliance issues. Specific compliance issues are defined in the matrix, along with the action required to be taken by the licensee to achieve compliance. The matrix also indicates what information will be required by the Inspector to confirm that the issue is being resolved, as well as provide guidance as to the appropriate enforcement response to apply.

While the matrix provides specific guidance, it is important to recognize that Inspectors and officers evaluate each incident of non-compliance on its own merits and, based upon the specific fact pattern, decide on an appropriate course of action.

The details of the service and enforcement agreement can be found in ***Appendix 1*** and details of the compliance matrix can be found in ***Appendix 12*** of this report.

B. LICENSING RELOCATIONS:

As part of the provincial Salmon Aquaculture Policy, the provincial government committed to relocating farms that were inappropriately located. With recent improvements in science and increased knowledge of the effects of net cage aquaculture, government and industry now have a better understanding of those factors that make an area suitable or unsuitable for aquaculture.

Since 2000, government and industry have identified a total of 37 salmon farms that should be relocated to more suitable sites. These 37 sites were identified based on consideration of a number of environmental, social and economic factors.

Environmental factors included the site's proximity to salmon-bearing streams, kelp beds, herring spawn areas, shellfish beds and other sensitive marine habitat.

Social factors included proximity to parks or other protected areas and proximity to First Nations reserves. Consideration was also given to environmental factors such as current speed and waste dispersal, the site's susceptibility to algal blooms, known conflicts with nearby residents or resource users, and proximity to industrial pollution sources. Economic factors consider benefits to coastal communities that may arise from moving a site to a more suitable area.

Farm relocations comply with new, stricter environmental standards and will ensure the continued protection of wild fish, marine mammals and other wildlife. Relocating poorly sited farms will also reduce the potential for social conflicts with other marine resource users.

A guide for completing site applications that will outline more stringent siting, monitoring and reporting requirements has also been developed. The Guide to Information Requirements for Marine Finfish Aquaculture Operations is complete and has been available at the MAFF website since June 2003; it can be found at the following link:

http://www.agf.gov.bc.ca/fisheries/siting_reloc/marineff_applic_guide_main.htm

C. COMPLIANCE AND ENFORCEMENT:

i. MAFF

In keeping with the inter-agency Service Agreement, the compliance and enforcement regime for MAFF Inspection and Compliance staff includes:

- promoting awareness, education, and training;
- promoting industry best practices;
- developing cooperative partnerships and agreements contributing to government objectives;
- conducting monitoring activities, inspections and audits;
- referring and assisting MWLAP in conducting investigations on alleged legislative and/or licensing violations; and
- reporting publicly on the compliance status of salmon farm inspections.

ii. MWLAP

MWLAP's compliance and enforcement program for the finfish aquaculture industry includes:

- developing and communicating standards to protect human health and safety and to protect and restore the environment and the natural diversity of ecosystems, including fish and wildlife species and their habitats;
- conducting annual field audits of fish farm sites to ensure compliance with MWLAP's (*Finfish Aquaculture Waste Control Regulation)*;
- conducting legal investigations to address non-compliance with regulatory standards; and
- reporting publicly on the compliance status of salmon farm inspections.

Government continues to improve its compliance and enforcement programs to meet its commitment to have an environmentally sustainable aquaculture industry with high standards of environmental protection.

To meet these objectives, a number of enhancements to government's inspection and compliance programs were implemented during the 2003 inspection cycle. These included:

- In 2003, MAFF and MWLAP staff continued to refine and enhance working relationships and communication efforts between agencies. The 2003 season marked the first season where MAFF conducted inspections at all active farm sites under the new joint agency Service Agreement (***Appendix 1***), that defines the roles and responsibilities in finfish and shellfish aquaculture.
- All Inspectors received enhanced vessel training and are now certified to Transport Canada standards for marine emergency duties.
- Part of the MAFF and MWLAP Service Agreement team participated in a Protective Safety System Training course.
- Expanded regional contacts through enhanced cross compliance efforts with other agencies, most notably the Department of Fisheries and Oceans by conducting joint inspections, investigations and broadened communication efforts.

- The addition of full time staff located in the Courtenay regional office has increased resources so that enhanced efforts can be put into finfish compliance. As well the new resources provide for more timely responses to non-compliance issues as well as enhanced compliance efforts in other areas of MAFF responsibilities, most notably shellfish site inspections.

- Enhancements were made to the inspectors' uniforms raising standards and providing a more visible profile. Additional equipment was added to improve visibility and provide a higher degree of safety.

Generally speaking, 2003 results demonstrate higher compliance results when compared to 2002 results. These results can be attributed to a number of factors, including recent regulatory amendments, development of industry led BMP's, and enhanced C & E regimes through implementation of inter-agency Service Agreement.

5. METHODOLOGY

A. INSPECTION ACTIVITIES

While inspections can occur at any time during the year, most annual inspections are completed between the months of May and October. The objective of these inspections is to measure compliance with regulatory requirements of MAFF and MWLAP and licence terms and conditions as set out in the Aquaculture Licence issued by MAFF.

An Inspector will visit every active salmon aquaculture site a minimum of once a year. Some farms may be subject to repeat inspections; particularly if there is an open investigation or ongoing non-compliance issues.

An inspection form (***Appendix 6***), and compliance report (***Appendix 7***), are completed by the Inspector for every inspection at an active finfish aquaculture site.

Inspection form: The inspection form is primarily designed for the use of the Inspector and assists with reviewing the site's compliance with regulatory requirements. The inspection form also forms part of the record of the site's compliance history.

Compliance Report: The compliance report is filled out at the time of inspection and a copy of this form is left on-site with the site manager or their designate. The compliance report details any deficiency, identifies the relevant regulatory requirements, specifies the corrective measure to be implemented and identifies the time frame for expected compliance.

Notification: The company headquarters will be notified as soon as practical and in writing of the results of each inspection. A copy of the compliance report that was completed on-site will be provided along with any other applicable compliance information. The notification letter that is sent to the company requests that the company responds to the identified deficiencies within a specified time frame. Companies are also requested to provide written notification once corrective measures have been implemented.

Review and Sign-off of Corrected Deficiencies: Once the Inspector has received notification that the company has corrected the identified deficiency; the Inspector must verify compliance in writing. This verification procedure may or may not involve a site visit depending on a number of factors including the nature of the deficiency.

***On-site Inspection Procedure**:* During the on-site inspection, Inspectors interview company officials and review the farm's operational procedures and maintenance records for completeness and compliance with *the BC Fisheries Act and Aquaculture Regulation*. The Inspector also performs an above-water visual examination of the site, including a perimeter inspection of each containment pen and infrastructure including anchors, walkways and other associated hardware.

In addition, each year spot dive audits are conducted at a limited number of randomly selected sites; a dive team is contracted to review the underwater portion of the containment and anchoring system. Details and the results of the dive audit are described later, in section 6 – B of this report.

B. KEY COMPONENTS OF THE ON-SITE INSPECTION – MAFF REGULATORY ISSUES:

Management Plan, Terms and Conditions, and Licensing: The management plan is a document the farm operator is required to submit that specifies design and operation criteria of the fish farm. Management plan applications undergo extensive reviews and once approved, compliance with the plan is a condition of the site specific Aquaculture Licence. Companies are required under the BC *Fisheries Act* to operate within the provisions outlined in these plans.

During the on-site inspection, the Inspector will assess compliance with the Aquaculture Licence and related management plan by observing and detailing site specific information. The Inspector will compare these observations against the most current management plan to determine compliance. This assessment includes information on biomass, species cultured, site configuration, licensing and any special provisos that may be attached as a condition of licence.

Escape Reports: The company must provide information on any escape events that have occurred in the last 12 months. While escapes must be reported within 24 hours to the Licensing and Compliance Branch, on-site inspections provide opportunities for Inspectors to audit this requirement by reviewing on-site records and to question farm site employees or managers.

Inventory Records: Companies are required to keep accurate and complete inventory of stock on hand for each net cage. These records must be maintained until that stock is removed from the site.

Inspection Records: Farm operators are required to conduct specific inspections on-site as part of the precautionary measures to prevent escapes. Regulations require these inspections to be documented and records must be kept on-site and produced at the request of an Inspector.

Best Management Practices Plan (BMP): Companies are required to develop these plans for each site. The BMP must include a description of specific practices and procedures used to prevent fish escapes during higher risk activities conducted at the farm site.

Amendments to the *Aquaculture Regulation* establishing the BMP requirement came into effect at the end of October, 2002. The 2003 inspection cycle marked the first year that industry's compliance to this requirement was assessed.

Escape Response: Inspectors verify that the company has developed and posted an escape response plan. Farm staff are often questioned to determine if they can accurately describe the contents of these plans.

Therapeutant Use and Records: On-site inspections provide an opportunity to ensure that therapeutant usage on the farm site is properly documented and these records are properly maintained.

Installation of Containment Structures: A walk-around inspection is conducted in which the Inspector ensures that the cage support equipment is designed, installed and maintained to prevent entanglement and chafing against containment nets, predator nets and shark guards.

Each year the ministry also conducts a random dive audit at a selected number of sites. Dive audits provide an additional opportunity to examine the underwater infrastructure for these inspection points in more detail.

Information on this year's audit program is described later in the report.

Net Cage Configuration & Storage: The installation of the net cage is examined to ensure that the net cage is properly installed, the tie off points are secure, the jump net is the required height, the net is the proper mesh size and there is sufficient weight on the net to prevent excessive billowing. Net storage is also reviewed to ensure nets are properly stored and under protection.

Net Cage Inspections: The Inspector reviews the condition of each containment net in use and may order or conduct net strength testing if there is any concern or issue over the integrity of any net cage. This may involve on-site testing or a request by the Inspector to remove the net for a complete out-of-water servicing.

The Inspector will also examine mesh size, frequency and quality of repairs, if the company is compliant with the specified net cage inspections and the required frequency of these inspections, and will also determine if the nets are properly tagged with an inventory control number and repairs are carried out as required.

Boat Docking: Inspectors review areas where boats tie up to ensure areas are designed to prevent propeller damage to net cages and that proper signage has been provided to identify these as designated boat moorage areas.

Fish Handling: If fish are being harvested or handled, the Inspector ensures that the company complies with requirements to have spotters and are using catch nets to help prevent accidental loss of fish through human error.

Predator Control: The Inspector reviews the predator control program for the farm site to ensure that the operator has responded to any repeated predator attacks by implementing additional measures to prevent damage to the containment structures that might lead to loss of stock.

C. KEY COMPONENTS OF THE ON-SITE INSPECTION – MWLAP REGULATORY ISSUES:

Registration: Company officials will be requested to provide verification that they have registered their sites with MWLAP.

Best Management Practices: Companies are required to document procedures that identify practices and operations consistent with the objectives that are defined in the (*Finfish Aquaculture Waste Control Regulation*). These practices are designed to minimize the discharge of wastes and/or reduce the risk of accidental spillage of potentially harmful materials.

The Inspector will check to ensure all the required elements have been addressed in the BMP plan.

Blood Water Disposal: Fish handling procedures are reviewed with the operator and in cases where fish are bled on-site the Inspector will determine how the farm operator disposes of or contains the blood water.

Net Treatment, Cleaning and Waste Disposal: The Inspector examines net handling procedures to determine the location and manner in which containment nets are handled and cleaned to remove marine growth.

Disinfectant Use and Disposal: The type of disinfectant the farmer uses to treat equipment or in foot baths to prevent the spread of fish disease is investigated by the Inspector. Storage methods, use, disposal and any treatment prior to disposal are examined.

Mort Storage and Disposal: The Inspector determines where fish morts are stored after they are collected from individual net pens. Where morts are stored on-site the Inspector reviews storage methods as well as the frequency of mort removal. Final destination of the morts is determined to ensure proper removal and disposal.

Refuse Storage and Disposal: The Inspector reviews disposal methods and determines the disposal location of domestic or industrial refuse produced on the finfish farm.

The above items are addressed within the *Finfish Aquaculture Waste Control Regulation* and are to be managed through a Best Management Practices Plan.

Sewage Treatment and Disposal: The Inspector determines the method of domestic sewage disposal and ensures proper authorization is in place if required. In addition, the Inspector will ask for the operator to produce the required documentation or sewage maintenance records.

Water Use and Licensing: The Inspector determines the source of domestic water supply to ensure that where required, the proper water use licence is in place.

Wildlife Predator Trapping: Trapping wildlife that prey on finfish is occasionally arranged by the farm operator. The Inspector determines the number and species trapped, how they are trapped, the trapper's name, and will ensure that a proper permit is in place for this activity.

Predator Management: Occasionally problem mammals that prey on farmed salmon are destroyed with firearms as approved by DFO. Inspectors review usage of firearms at the farm site.

Fuel Product Use, Storage and Containment: The Inspector reviews fuel storage on site to determine if the fuel is securely stored in an environmentally safe manner and that diesel tanks and generators have a minimum 110% containment or other adequate containment method. Inspectors also determine whether the operation is otherwise in compliance with the applicable section of the BC Fire Code.

Environmental Management: The Inspector determines if a spill contingency plan is available on site, reviews the plan, and determines whether adequate spill equipment is present to support the plan.

D. COMPLIANCE RATES FOR 2003 – REGULATORY AND LICENSING REQUIREMENTS

PART #1

MAFF REQUIREMENTS

A. Management Plans and Licensing

The management plan is a key element in establishing and maintaining performance-based standards for environmental sustainability, stewardship and compliance. The plan and accompanying information is used by biologists in the Aquaculture Development Branch (ADB) to analyse the technical feasibility and biophysical capability of proposed and existing fish farm operations. ADB then makes recommendations to statutory decision makers in the Licensing and Compliance Branch (LCB). LCB uses the plan to establish conditions of licence under the BC *Fisheries Act*, and as a compliance measure under that and other attendant acts and regulations. LCB has the authority and the capacity to inspect fish farm operations for compliance with the Aquaculture Licence.

Non-compliance with the operational conditions of a plan may, in some cases, have the potential to result in negative effects to the marine environment as well as the environmental sustainability of the operation itself. This can result from having more than the approved maximum biomass, or by altering the approved cage system configuration so that it no longer makes optimal use of the biophysical attributes of the site to avoid environmental impact. There may be technical concerns, as well, if there is variance from the originally approved engineering specifications in the plan. Variance from the plan may also put the operation in conflict with the siting criteria (e.g. proximity to salmonid streams or sensitive habitat) under which the original plan was approved.

Every aquaculture facility must have an approved management plan in order to obtain an aquaculture licence. Currently, the holder of an aquaculture licence must comply with the approved plan. Failure to follow the plan is deemed non-compliant with licence conditions and is subject to enforcement action.

Several aspects of the management plan that MAFF Inspectors reviewed for compliance this inspection cycle included: the number and size of the pens that are on site and their lay-out (or site configuration), the species being cultured, the biomass levels on site, and the licence status and compliance with any special provisos that are attached as a condition of licence.

The compliance level for most of the above aspects, except for site configuration, and biomass levels, was 100 percent.

With respect to the approved biomass limits, industry compliance levels were found to be better from 75 percent in 2002, to 86 percent in 2003. As well, compliance to site configuration has also improved from 25 percent in 2002, to 45 percent in 2003.

Despite the relative increase in compliance levels to site configuration over the 2002 findings, compliance levels in this particular area remain low. Site configuration and biomass levels are interrelated factors and two of the components that have been considered together when establishing an estimate of the requested biomass capability of a site. (These numbers are determined through a modelling process and are established in anticipation of meeting performance-based standards for that particular site.) Once these elements of the management plan are approved, the company's compliance with these criteria become a condition of licence.

Before implementing any changes to the on-site operations that are components of an approved management plan, the company must obtain approval through a formal application procedure. In many cases industry has not followed this procedure and has made changes to meet operational needs without the necessary approvals prior to, and in some cases without seeking approval.

The restriction with this method of management plan approval is that industry cannot make, often what are simple changes to the infrastructure on site that are needed to meet operational needs without submitting an amendment to have their management plan reviewed, typically a lengthy and involved process.

With this in mind, a review has recently been undertaken at MAFF on internal administrative procedures in an effort to streamline management plan amendments and timelines for review and approval, while nonetheless maintaining policies and procedures on performance objectives that are important from an environmental sustainability perspective.

In order to simplify administration and clarify requirements for compliance, specific elements of the Management Plan (identified below) should be added directly to the Aquaculture Licence as specific Terms and Conditions.

Those elements are:

The Total Maximum Production per Production Cycle (TMP) **and** the approved species established for the site. Companies will be prohibited from producing more fish or different species than identified on the Licence unless these elements are amended via L&C Branch approval;

A Maximum Pen Area (MPA) will be established for each Aquaculture Licence. Companies may, if circumstances warrant, increase the number of pens utilized on each site up to the MPA without requesting an amendment to the Management Plan. If the MPA is to be exceeded, approval for an amendment must be obtained from L&C Branch prior to this occurring;

A modified Site Layout Diagram, described in the licence as "Typical" will be appended to the licence. Variances between the site diagram and actual site layout will be permitted where reconfigured designs are engineered and anchored to appropriate standards, endorsed by an approved anchoring specialist and variances don't exceed the specified MPA for that site.

As part of longer term changes to the Management Plan, the concept of Intensive Use Areas will be introduced. In subsequent years, pens will be confined to an area designated as the Intensive Use Area (IUA). It is anticipated that the upcoming 2004 inspection cycle will be a year of transition as MAFF and industry adjust to this new approach of accessing compliance to the management plan.

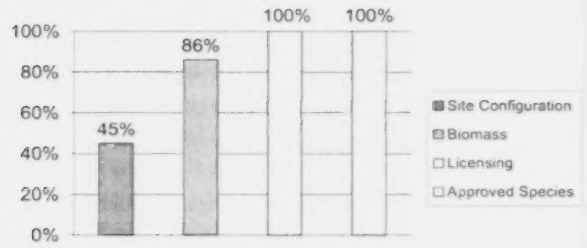
The end result of this adjustment means that cage size, type, number and orientation are no longer as important a variable in determining approved biomass and throughput production levels. This also means that industry has now been provided some limited flexibility for adjustments of cage infrastructure on site without the requirement to submit and wait for approval of management plan amendments.

It is important to recognize that the true determination of the environmental impact of the amount of fish or biomass at any given site is the indicator of ***organic loading*** regulated under the *Finfish Aquaculture Waste Control Regulation*. This means that future harvest tonnage at a particular site will be adjusted to comply with performance-based standards defined under the FAWCR and could be higher or lower than initially established biomass numbers.

MAFF continues to be committed to ensure that on-site operations reflect the approved conditions identified in a company's management plan. The compliance and enforcement approach applied in the 2002 inspection year continued in 2003. In some cases, a number of enforcement sanctions have been initiated for continued and repeat non-compliance in this area.

Graph 2 illustrates compliance rates with the management plan and licensing requirements. It shows specific compliance rates with various factors including current licensing, approved species on site, net cage configuration and biomass.

GRAPH 2
COMPLIANCE WITH MANAGEMENT PLAN CRITERIA



B. Escape Reports

The *Aquaculture Regulation* requires that fish escapes or suspected escapes be reported to MAFF verbally within 24 hours and in writing within one week from the date of discovery. On-site inspections provide the opportunity for Inspectors to interview site employees and view log entries and other farm documents to assess compliance with this requirement.

On occasion, escape events or suspected events are encountered that have not been reported. Usually, numbers in these cases are small and are isolated instances where fish have been lost during handling or harvesting operations.

As all escapes are viewed as serious, these isolated instances are investigated and where warranted referred to MWLAP for further investigation.

No evidence of unreported escapes was encountered during the 2003 on site inspections.

C. Stock Inventory Reports and Record Keeping[ii]

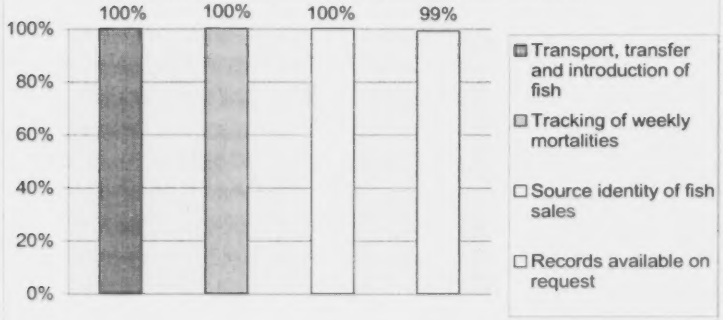
The *Aquaculture Regulation* requires that licence holders keep accurate and complete inventory records of stock on hand and requires these records to be maintained for each net cage in the system. These records must show the inventory introduced to the farm site, the source of the stock and documentation should reconcile any fish transferred in or out, including escapes and mortality.

The objective of this requirement is for the farm operator to know at any given time what the stock levels are for each net cage on the farm. This is not only important from an animal husbandry perspective but also to enable the operator to more accurately assess and report incidents of escape, and provide a measure of compliance with approved biomass. Accurate records are also important for the statistical database that MAFF maintains.

The inspection team does not complete detailed forensic audits and reconciliation of inventories with paper documentation. Instead, compliance is based on evidence presented by the farm operator, to the satisfaction of the Inspector that these records are being kept in the manner prescribed. Part of the regulatory requirement also assessed is the requirement for these records to be kept on-site and made available to the Inspector upon request.

Inspectors found that at all 77 sites operators were maintaining records as required. Only at one site did the operator fail to have the records on site and available at time of inspection.

GRAPH 3
COMPLIANCE WITH STOCK INVENTORY RECORD KEEPING REQUIREMENTS



D. Inspection Records[ii]

Inspection records are important not only for the farm operator as a method to review daily activities and for keeping a history of maintenance activities, but they also provide an audit tool so Inspectors can verify that the operator has complied with specific inspection points.

There are a number of key record keeping requirements specified in the *Aquaculture Regulation*. This section examines the compliance with the requirement to maintain daily logs of inspection activities, any inspections that occur after a high risk activity and net maintenance records.[iii]

Records of Visual Inspections – Equipment:

The *Aquaculture Regulation* contains a variety of record keeping requirements, including documentation of daily visual inspections or any inspections conducted after an occurrence that might be considered as creating a higher risk of escape.

Record keeping requirements for visual observations include: daily records of all above-water inspections of cage support systems, any inspections completed after extreme environmental conditions, and high risk activities such as net cage changes, fish delivery, recurring predator attacks, and vandalism to net cages or equipment.

This information must be kept on site for one year from the date of recording and must be presented to an Inspector upon request.

Records of Net Maintenance:[ii]

The *Aquaculture Regulation* requires that specific information is collected and maintained for each containment net on site.

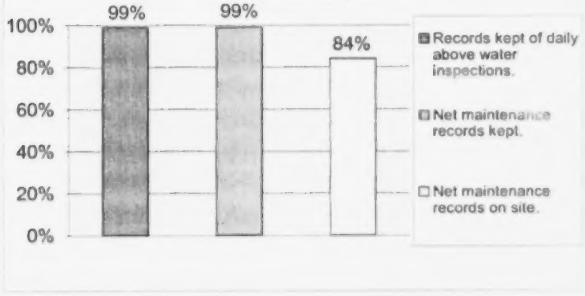
Net maintenance records include specific details such as: net inventory number, dimensions, mesh size, the accumulated time in the water since the most recent out-of- water inspection, a description and the dates of each underwater inspection performed since the most recent complete out-of- water servicing and inspection, and a description and date and reasons for all recent repairs.

Many of these records must be kept on site and must be produced at the request of an Inspector.

Inspectors found that at the 77 operational sites inspected, 14 sites had deficiencies noted in relation to inspection record keeping requirements.

These included one site where there had been failure to record the results of the daily inspection in a log book, one site where the net servicing records were lacking information on the net breaking strength and a further 12 sites where the required net cage records were not on site. These included eight circumstances where the out-of-water service records were not available, two where net maintenance records were missing and two sites that did not have any of the required net maintenance or servicing records.

GRAPH 4
COMPLIANCE WITH NET RECORD KEEPING REQUIREMENTS



E. Best Management Practices Plan

Both the *Finfish Aquaculture Waste Control Regulation* and the *Aquaculture Regulation* contain requirements for marine fish farms to develop and implement a Best Management Practices Plan (BMP).

Under the *Aquaculture Regulation*, the requirement to have a plan in place came into effect in late October, 2002 and the requirement for a BMP under the *Finfish Aquaculture Waste Control Regulation* came into effect in March, 2003.

At the time of 2002 inspections, it was not mandatory for operators to meet the BMP requirement and compliance was not evaluated during that inspection cycle. The first compliance audit for the BMP was completed in 2003.

The purpose of the BMP requirement under the *Aquaculture Regulation* is for the companies to identify and address operational procedures to prevent escapes. Detailed summary information is provided in ***Appendix 10*** that describes common causes of escapes.

Companies must develop and follow a written BMP for the operation and maintenance of their marine finfish facilities. Operational procedures identified in the BMP must be consistent with or exceed practices described in Appendix 2: Standards of Practice for Marine Finfish

Aquaculture Escape Prevention and Response in the *Aquaculture Regulation*.

The BMP will identify how a wide range of operational activities are to be carried out. These will include as a minimum, finfish delivery, handling and grading, net cage changing, boat operations and maintenance, towing containment structures, management of predation and recovery of mortalities.

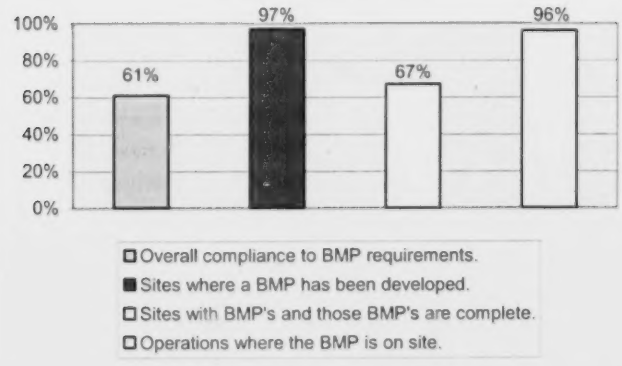
As all these activities carry some risk, it is critical that the BMP is developed to address these issues. All employees must understand and follow the BMP at all times.

It is important to note that the Inspector does not make any assessment of the adequacy of the BMP, rather they check to ensure the operator has addressed all the elements required under the *Aquaculture Regulation*.

Any time there is a change in the operation of the marine finfish aquaculture facility the BMP must be updated to reflect these changes. Companies should periodically review operational procedures to ensure consistency between on-site operations and what is described in the BMP.

The results of the 2003 inspections found 30 sites (out of 77) that were deficient in some aspect of the BMP requirement: two sites where the operators had not yet developed a BMP, three sites where the company did not have a copy of the BMP on site, and 25 sites where the operators could not produce a statement that the BMP has been reviewed and endorsed by the holder.

GRAPH 5
COMPLIANCE WITH BEST MANAGEMENT PLAN REQUIREMENTS - MAFF



F. Escape Response

Every operator must have a written escape recapture plan. To initiate an effective escape response in the event of an incident, staff must be well trained in the elements of these plans. There must be step-by-step procedures for preventing further escapes and for reporting escapes. These plans must be posted in a visible location at the facility and the location and contents of this plan must be well understood by all staff.

All 77 facilities inspected had developed an escape response plan. There were two sites where the plans were not posted in a visible location as required.

PHOTOGRAPH #1

Escape recovery kit containing dedicated seine net and equipment to be used in the event of an escape. In the event of an incident this net and equipment is generally deployed inside a damaged containment net in an effort to prevent further loss of fish.

Another aspect of the escape response plan is for the operator to have arrangements with federal and local government authorities to obtain without delay the approvals necessary to attempt a recapture effort. This is a requirement of Section 40 of the Aquaculture Regulation. To facilitate industry meeting this requirement DFO created a special ZZA permit that is issued to fish farm companies for the recapture of escaped Atlantic salmon only. The permit is not site specific and is issued to the salmon farming company.

If the company is farming Atlantic salmon part of the assessment to determine compliance to Section 40 is determining if a ZZA permit is in place.

In 2003 DFO issued seven ZZA permits.

G. Therapeutics - Use and Record Keeping[ii]

There are specific regulatory standards for documenting use of prescription therapeutics on farmed fish. Documentation of therapeutics is an important record keeping requirement for the finfish farmer. Records that identify treatment and treatment schedules must be kept. The *Canadian Food and Drug Act* provides standards governing the use of drugs and fish destined for human consumption, and the holder must comply with those standards. Fish may be harvested if the drug has been prescribed and the mandatory period of time, as specified by the veterinarian, has passed since the administration of the drug.

To satisfy the inspection, the operator must be able to demonstrate that all appropriate paper work has been completed to document and track the administration of any therapeutics.

This includes a record and log of:

- the aquaculture licence number and name of the holder;
- the location of the facility;
- the species of finfish being cultured;
- the name of the veterinarian;
- the name of the therapeutics administered;
- how the therapeutics were administered;
- the treatment schedule including the date treatment commenced;
- the date of last treatment;
- the species of finfish; and,
- the name and signature of the person responsible for administering the therapeutics.

In the event treated fish have been harvested the holder must be able to produce a statement with specific information on the treatment history of the lot harvested. This statement must then accompany the fish to the processing plant. It provides the operator of the plant with documentation of any drug use and if fish have been treated, verifies compliance with the withdrawal periods.

MAFF Inspectors conducted reviews of drug record keeping requirements only at farms where fish had been medicated and where these records were available on-site for inspection. In total, 74 sites were included in the 2003 survey. The inspections revealed that 73 sites were in compliance with all drug reporting requirements under the *Aquaculture Regulation*.

The deficiency noted at the one site related to failure of the operator to meet specific record keeping requirements that are required during the administration of the drug MS 222. MS 222 is an anaesthetic that is prescribed by a veterinarian and in this case was being used in conjunction with a sea lice count. Prior to being handled fish are first anaesthetized by dipping into contained treated water. MS 222 is a low risk product with a short withdrawal period, generally 5 days and in this particular case did not represent any human health hazard.

MAFF Inspectors encountered 16 sites where therapeutics were in use. Staff at these sites were able to satisfy the requirements of the *Aquaculture Regulation* by identifying treatment lots, the therapeutics used, the name of the veterinarian and the withdrawal time.

H. Net Cage Installation, Configuration, Storage and Inspection

Installation of Containment Structures:

The design of the cage support system is important when considering the potential for snagging and tearing the containment net. Containment nets can be, and are, subjected to extreme loading, especially if they are fouled with growth, are in a high current situation or are exposed to a combination of these and other factors. The net mesh, if snagged on an anchor shackle or other catch point, cannot tolerate extreme loads and a snag can quickly develop into a significant tear under certain conditions.

All equipment that comes into contact with the containment net must have smooth exteriors designed to prevent snagging the net on rough edges that might result in tears and subsequent loss of fish. This includes both external and internal weights as well as any attachment points and other parts of the infrastructure. This also includes any harvesting, feeding or grading equipment that might be used on or around the site.

Not only is it important for equipment in contact with the containment net to be properly designed, it is also important for the operator to regularly ensure that equipment is in good repair and has not been fouled with marine growth. Heavily fouled equipment creates an increased potential for snagging and tearing nets.

PHOTOGRAPH # 2

An above-water review of the containment structure.

In investigations of incidents where fish have been lost or suspected losses have occurred, it has been found that some tears and subsequent loss of fish can be attributed to improper weighting or through contact with various components of the net weighting or system anchoring points. Industry is continually reviewing these aspects of containment structures and improvements are constant.

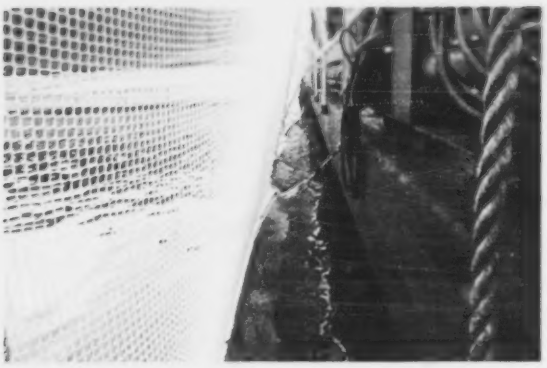
The above-water inspections did not identify any deficiencies at the 77 operating sites.

One of the features of the dive audit survey conducted under contract by the ministry is that it provides the opportunity to view the containment system and supporting infra structure below the waterline. In 2003, five dive audits were conducted. Findings from the audit are discussed in a later section of this report.

Net Cage Attachment Points and Jump Nets:

The *Aquaculture Regulation* specifies that the primary point of attachment for net cages is at the water line rope. The water line rope is designed to support the heavy load of a containment net. Secured to this water line rope are numerous reinforced tie-off points that take the bulk of the strain on the nets once they are deployed. These are the primary attachment points for the containment net and are required to be secured to the walkway with lines that are sound and adequate to withstand the strain of the net. Nets should not be supported by the stanchions or uprights as these are normally not designed to withstand the load and can fail under extreme conditions.

PHOTOGRAPH # 3



Net cage properly tied off at the water line.

Inspectors found that out of 77 sites, 71 were in compliance with this requirement. The majority of the deficiencies noted in this area were usually the tie-off points in one corner of the system. Corners are often used by divers for access points to the net cage and occasionally these points were not re-secured after a dive. Where tie-off issues such as these were noted, they were identified as deficiencies.

Jump nets are the portions of net that extend above the water and are designed to prevent fish from jumping over the containment system. The regulation specifies that the height of these jump nets must extend at least one meter above the surface of the water.

Jump nets were in place at all 77 farms inspected. There were four deficiencies noted where the height of the jump net was less than the required one meter.

The regulation also requires that net stanchions and net cage railings are not used to moor large vessels that could cause damage during strong wind or tidal exchanges.

There were no situations where large vessels were found to be moored inappropriately.

Net Weights and Attachment Points:

The weighting system must be designed so that net weights are sufficient to prevent excess billowing of the net. It is also important to ensure that weights are evenly distributed at a sufficient number of points along the net for even weight distribution which prevents point loading on the containment net.

A taut and properly weighted net is important, as billowing nets are more subject to becoming snagged as well as more susceptible to tears or damage from predators. Of the 77 sites inspected one site was noted to have excessive billowing occurring.

Mesh Size and Net Storage:

Containment nets with varying mesh are used during a grow-out period. As the fish increase in size, they are moved into bigger containment nets with larger mesh. The farm operator is required to ensure the net mesh is always kept to a size that is small enough to contain the smallest fish. Alternatively an operator may have to grade the fish prior to, or when, moving the fish into a pen with larger mesh size to avoid losing smaller fish.

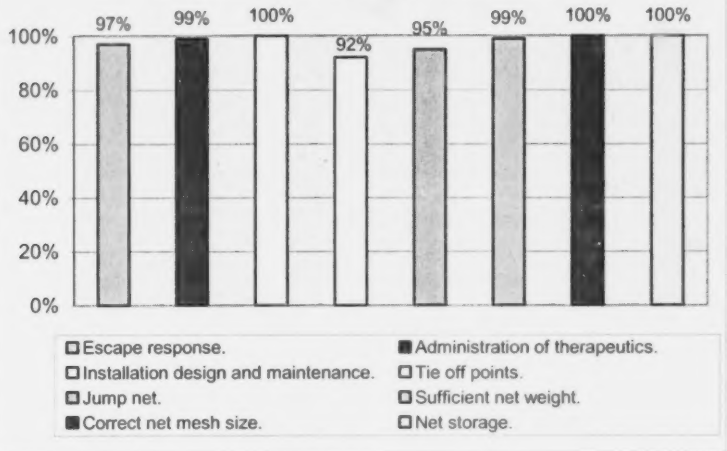
Ultra-violet rays can degrade containment nets. Failure to properly cover a net can expose small sections of the net to harmful ultraviolet sunlight. Sections of the net weakened in this manner can be in isolated locations that can be easily over-looked during servicing and testing. The regulations require that storage of nets on dry land must be done in a manner that prevents exposure to UV light.

PHOTOGRAPH # 4

Net properly bagged and protected from UV.

The following (**Graph 6**) provides compliance rates to the various requirements for net cage installation, configuration, storage and inspection as described in the above sections.

GRAPH 6
COMPLIANCE WITH CONTAINMENT INSTALLATION, MAINTENANCE AND FARM PRACTICES



I. Net Cage Inspections

During the 2003 inspection cycle at the 77 operating sites, there were close to 700 deployed net pens containing fish.

The integrity of these containment nets is an important factor in finfish farming. Nets must be able to withstand the rigours of the marine environment and weak nets are more susceptible to breakage and subsequent loss of fish. The *Aquaculture Regulation* specifies that all containment nets must be properly tagged, maintained and regularly inspected.

Net Marking:

To effectively document and maintain net history, the regulation requires that each net must be marked in a unique and permanent manner. In most cases, this consists of a coded tag attached to one or more of the upper corners of the net cage.

Containment nets must be properly identified to ensure that the operator can maintain a complete history of the net. In the event of an incident, net records are a key component of the investigation and complete records must be provided to the Inspector upon request.

Inspectors found two sites out of the 77 inspected where nets were not adequately marked with an identification number.

PHOTOGRAPH # 5

Tag on net cage used for identification.

***Out-of-Water Servicing**:*

The frequency of net testing is left up to operators thus providing them flexibility to meet operational needs.

Inspectors, however, have authority to require an operator to demonstrate that a net cage meets the minimum breaking strengths where the condition of any net may be in question. If an Inspector has reason to doubt the integrity of a containment net, in addition to reviewing service records, they can require the operator to conduct an on-site test of the net or can require that the net be removed from the water for a complete servicing and inspection.

No additional inspections or actions were requested by the Inspectors under this section in 2003.

In general, companies are now servicing and strength testing their nets at the end of a grow-out period.

The out-of-water servicing includes net strength testing, assessment of overall condition and any necessary repairs. A record of the testing must be completed and this record must accompany the net to the farm site and be presented upon request to the Inspector as the most recent out-of-water servicing record.

The *Aquaculture Regulation* also specifies the minimum breaking strengths for containment nets. A standardized mesh strength testing procedure has been developed and must be followed when conducting these tests. ***Appendix 4*** describes this procedure and an electronic copy can be found at the following link:

http://www.agf.gov.bc.ca/fisheries/compl/Final_net_testing_protocol.pdf

Operators at 67 out of 77 farms sites inspected had the required out-of-water servicing records on site.

Net strength testing and record keeping requirements were areas in the 2002 regulatory amendments that underwent extensive revision. As a result of the new requirements, it was expected that companies would need some time to comply with the new testing and documentation requirements and that by 2004 compliance levels will show a substantive improvement.

Sections 14 and 15 and Tables 1 through 6, in *Appendix 2* of the Aquaculture *Regulation*, found as ***Appendix 5***, describes the minimum breaking strength requirement that various size containment nets must meet.

Any nets that do not meet these requirements are inadequate and they cannot be re-deployed as containment nets. These nets should either be disposed of or relegated to other purposes.

Net Inspections and Repairs:

The *Aquaculture Regulation* specifies that daily above-water inspections of net cages are required to ensure integrity of the system. This information must be maintained in the daily maintenance logs.

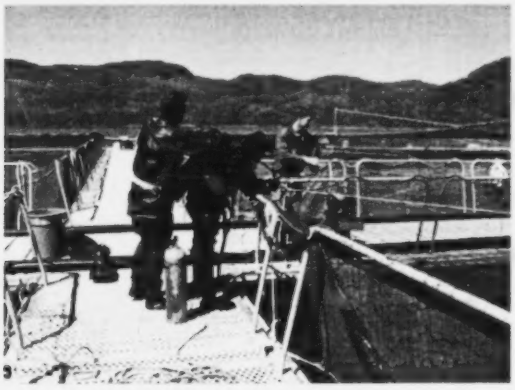
Daily above-water checks were being conducted at all 77 sites.

Deployment of a containment net is a high risk activity. Before the net is properly stabilized there is an increased risk that the net may catch and tear on a snag point. The *Aquaculture Regulation* requires that once a containment net is in place and prior to the introduction of fish, and in addition to any above-water inspections, an underwater inspection must be made to ensure that no damage has occurred during the net deployment that might contribute to a fish escape.

Inspectors determined that 75 out of 77 sites were conducting pre-inspections prior to the entry of fish.

The *Aquaculture Regulation* requires that underwater inspections of containment nets be completed every sixty days or after any activity that may increase the risk of net failure and present a risk of escape. Examples of this would include extreme environmental conditions, net cage changes, fish delivery, predator attacks, towing net cages and vandalism.

PHOTOGRAPH # 6



Company divers preparing for a net cage inspection and mort recovery.

The *Aquaculture Regulation* currently specifies that these under water inspections be conducted by divers but also provides the opportunity for flexibility in the event that an alternative suitable method is proposed. Any proposed method will have to be reviewed and approved by MAFF before it can be used. In 2003, all underwater inspections were conducted by divers and no alternate method has been approved to date.

In all cases underwater inspections were being conducted on the containment nets every sixty days as well as after high risk activities. As well all operators were in compliance with the record keeping requirements.

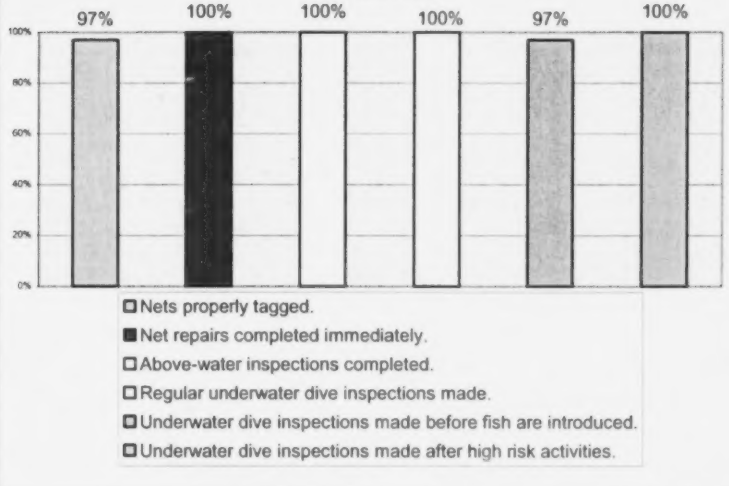
It is also important and a requirement that all net damage found during regular inspections of nets that are in use, is immediately repaired. This includes both the containment net as well as the jump net portion. Any temporary net repairs should be replaced with more permanent repairs as soon as possible. There were no deficiencies noted with respect to this requirement at the 77 sites inspected.

PHOTOGRAPH # 7

Net repairs completed on the jump net portion of a containment net.

The following graph illustrates the compliance rates with various net maintenance and inspection requirements. It includes compliance with net tagging, net repairs, any above-water inspections, regular underwater inspections, pre-dive inspection before the entry of fish, and dive inspections after high risk activities.

GRAPH 7
COMPLIANCE WITH NET TAGGING, SERVICING AND INSPECTION



J. Boat Docking

To reduce or eliminate potential damage to net cages from vessels travelling to and from farms, a specific docking site for vessels must be identified on the farm site. The regulation requires this docking site to be designed or located in a manner to prevent propeller damage to the cage systems and must be marked with a highly visible sign. The regulation also prohibits mooring large vessels to cage support system rails or stanchions.

Operators at the 77 sites inspected were able to identify designated docking areas and all were designed or located in an area to prevent net damage. There were no circumstances identified where large vessels where inappropriately moored. Operators at 62 of the 77 sites had erected signs directing boat traffic to these designated areas.

PHOTOGRAPH # 8

Properly designated and signed vessel docking area.

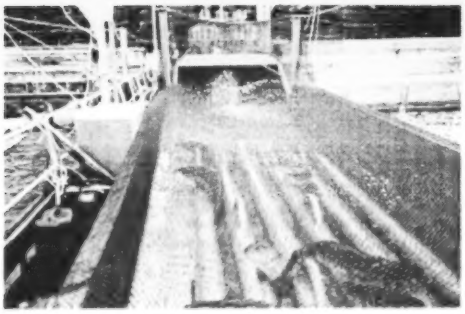
K. Fish Handling

***Catch nets**:*

The *Aquaculture Regulation* requires the use of catch nets when operators are conducting higher risk activities such as transporting, harvesting, grading, sampling and/or moving fish. Catch nets act as a back-up and help prevent possible loss in the event of human error or equipment failure.

One operator out of 77 inspected did not meet the requirement to have proper catch nets in place.

PHOTOGRAPH # 9



Grading operation covered with catch net to prevent accidental loss of fish.

Spotters:

Another preventative measure that the *Aquaculture Regulation* requires is the use of spotters during high risk activities. A spotter is a farm employee who has been assigned the specific task of visually watching for any event during a high risk activity that might in any way, contribute to an escape of fish. Ideally, spotters should be experienced farm employees that are familiar with the operation in progress and should not be engaged in other activities at the time. Depending on the event, it may be appropriate to have one or more individuals acting as spotters.

At all farm sites inspected operators indicated spotters were used during high risk activities.

Predator Control:

Although the *Aquaculture Regulation* does not specify that finfish farm operators must deploy predator controls it is expected that farm operators will initiate measures against predator attacks where necessary.

The *Aquaculture Regulation* requires that if a pattern of predator attacks is established, holders must initiate measures to prevent net damage and loss of fish. Failure to comply with these requirements could be viewed as failure to take reasonable measures to prevent an escape.

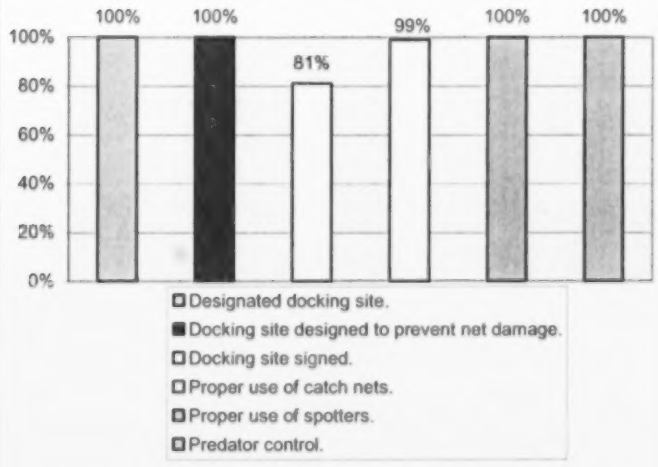
Most farm sites inspected had some measure of predator deterrent in place. In some cases, two or more systems were in place. Common types of predator systems include predator nets, shark guards, and bird exclusion netting above water. No violations were noted with respect to predator control.

PHOTOGRAPH # 10

Bird netting used as a predator control.

The following graph indicates compliance with boat docking requirements, use of spotters and predator control.

GRAPH 8
COMPLIANCE WITH DOCKING, USE OF SPOTTERS AND PREDATOR CONTROL



E. COMPLIANCE RATES FOR 2003 – REGULATORY AND LICENSING REQUIREMENTS

PART #2

MWLAP REQUIREMENTS

Best Management Practices Plan and Site Registration

As noted previously, all farm sites as of March, 2003 required a Best Management Practices Plan (BMP) in accordance with the provisions of the *Finfish Aquaculture Waste Control Regulation* (FAWCR). Finfish farm operators are required to prepare and implement a BMP that is specific to each fin fish farm. As well the FAWCR requires that the facility has applied to and is registered by MWLAP.

The objective of the BMPs under the FAWCR are:

- to ensure compliance with waste standards in the FAWCR;
- to provide for continuous reduction of potentially harmful discharges and quantity of wastes;
- management of potentially harmful materials;
- continual improvement in feed conversion ratios to reduce the amount of fish waste;
- prevention of spillages into the environment;
- prevention of the attraction and access of wildlife to feed foodstuffs and morts;
- prevention of access to containment structures by wildlife;
- minimization of spillage and odors from mort storage and disposal;
- management of major fish kills via an emergency fish kill contingency plan.

The BMPs should offer a model of management practices that include the best structural and non-structural controls and operational and maintenance procedures available.

The FAWCR identifies a number of key elements that the BMP should include:

- a description of specific management practices and standard operating procedures used to achieve the objectives
- a finfish kill contingency plan
- a statement that the BMP has been reviewed and endorsed by the operator, and reviewed and understood by the individuals responsible for implementation.

The Inspectors or Conservation Officers examine the BMP on site to ensure that the plan correctly identifies the elements that are prescribed in the regulation. In addition the Inspector may review parts of the plan to access if key points within these elements are included.

It is important to distinguish that during this review the Inspector does not make an assessment of the adequacy of the plan, only that the BMP documents contain all the required elements.

Inspectors reported the following compliance levels:

- At 63 of the 77 sites the company officials were able to verify that registration with MWLAP had been completed.
- Overall compliance indicated that at 55 of the 77 sites the BMP was considered complete in all aspects.
- At 74 of the 77 sites a BMP plan had been completed.
- 71 operators had the BMP on site.

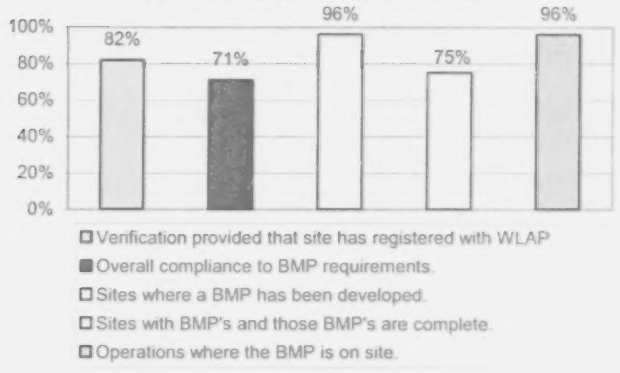
Inspectors were able to review 71 operations where the BMPs were on site. Findings indicate that 18 sites were missing various components of the BMP. These included:

- 14 sites where the company had not complied with provisions of section 5 and 6 and standards described in Section 4.
- 12 sites where the BMP did not address continual reduction of the discharge or potential discharge of wastes and pollutants.
- 5 sites where the BMP failed to address continual improvements in the feed conversion ration for feed fed to finfish.
- 2 sites where the BMP failed to address feed spillage.
- 2 sites where the BMP failed to address the prevention of access to containment structures by wildlife.
- 1 site where the BMP did not address prevention of the attraction of wildlife to feed, foodstuffs or wildlife.

- 1 site where the BMP did not have a finfish kill contingency plan. An additional 9 sites where the company had developed a finfish kill contingency plan but were missing what are considered key elements to the plan. This included 6 instances where contact numbers where missing and 5 that had not considered fish kill thresholds.

- 6 sites where the BMP did not have a statement that the BMP has been reviewed and endorsed by the operator.

GRAPH 9
COMPLIANCE WITH REGISTRATION AND BEST MANAGEMENT PLAN REQUIREMENTS - WLAP



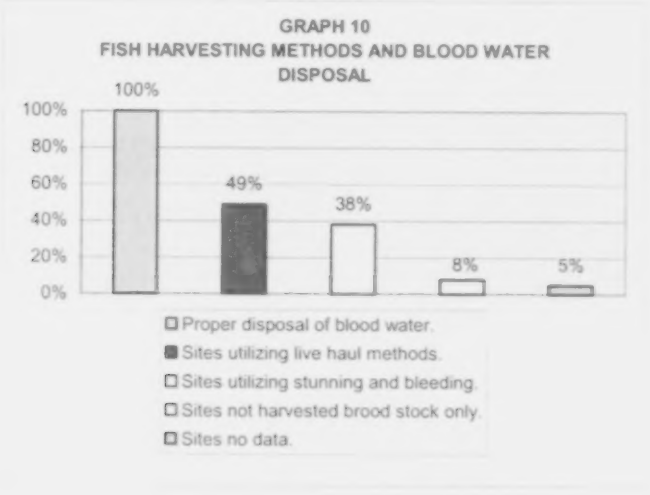
A. Blood Water Disposal

In an effort to maintain the high quality of farmed fish, salmon farmers rely on two methods to deliver their fish to the processing facility in prime condition. One is using a live haul vessel where the fish are harvested and delivered live, while the other is a stunning and bleeding operation carried out either on site or during delivery. Intentional discharge of untreated blood water to the environment is not permitted.

Blood water associated with a stunning and bleeding operation has a very high biochemical oxygen demand (BOD), and can negatively impact dissolved oxygen levels in the marine environment. It has been suggested that the release of blood water to the environment may also result in disease transmission. Predators may also be attracted by released blood water.

Disposal methods for the blood water included transfer into mort containers, or transport and disposal of blood water at a processing facility.

There were no deficiencies reported at the 77 sites inspected with respect to disposal of blood water. Approximately 49 percent of site operators utilized a live haul system, 38 percent a stun and bleed operation during harvest, 8 percent of the sites did neither, as they were for brood stock only. Data was not collected on transport methods from the remaining 5 percent of sites.



B. Net Cleaning Waste Disposal

Net Treatment:

Predator and containment nets may be chemically treated in order to increase their longevity and strength, as well as to reduce fouling by marine plants and organisms. Typically, treatment consists of dipping the containment net into an approved antifoulant solution that inhibits marine growth.

Net Cleaning:

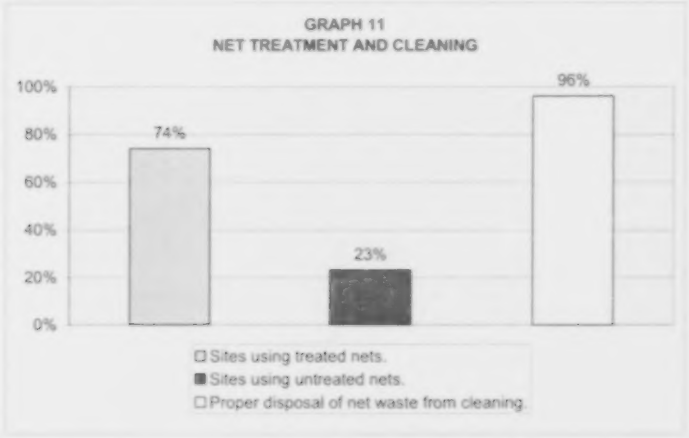
The frequency of net cleaning is largely dependent on the degree and condition of antifoulant treatment as well as the environmental conditions at the grow out site where the nets are deployed.

Typically, nets are cleaned at least once a year. The cleaning process is necessary to allow unrestricted flow of water through the net cage as well as to reduce the weight and resulting strain on the net cage and support equipment. Cleaning the nets removes mussels, algae, and other materials that have fouled the nets and in the case of treated nets will also remove some of the antifoulant during the cleaning process.

The wastewater and debris generated through the net cleaning process if completed on site may have a negative impact on oxygen levels in the marine environment and the benthic community.

Net cleaning is conducted both on and off site with the resulting waste discharged on land or into the marine environment.

Of the 77 salmon farms inspected, the majority of the operators had their nets cleaned at their net loft facilities located off site. There were three sites where non-compliance issues were identified, where the waste generated from cleaning nets on site was not properly managed.



PHOTOGRAPH # 11

On-site net cleaning drum system.

C. Footbath Waste Disposal

Footbath disinfectants are utilized at farm sites to minimize the transfer of disease from farm to farm, as well as disease transfer within a farm. Commonly used footbath solutions are virkon, ovadine and bleach. Over time, especially when exposed to sunlight, the disinfectant's effectiveness lessens and it becomes necessary to periodically refresh footbaths. Depending on the solution used, the period of time between refreshing the foot baths varies but generally most footbaths are replaced on a weekly basis.

PHOTOGRAPH # 12

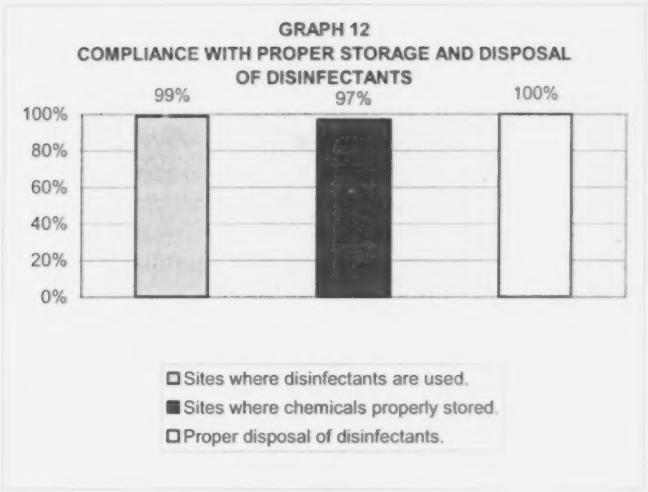
Footbaths with disinfectants used as disinfectant.

In order to safely manage the disposal of used liquids, footbath materials must not be capable of causing harm or injury to plant or animal life-forms in the marine environment. Any discharge or storage must meet the requirements of the *Waste Management Act*.

Discharging the footbath waste into septic tanks and mort containers prevents direct discharge into the environment; however, these practices may have a negative impact on the septic tank operation, or the mort composting process.

Of the 77 farm sites inspected there was only one site where disinfectants were not used. At the majority of the remaining sites used disinfectants were disposed of directly into the mort containers. In some cases, treatment of the disinfectants was practiced prior to discharge.

Inspectors found two circumstances where the storage of disinfectant chemicals did not meet the requirements. There were, however, no situations were compliance issues were noted, with respect to their disposal.



D. Mort Disposal

Fish mortalities, or morts, are fish that have died prior to harvest due to a number of reasons including stress, plankton blooms, predator strikes or disease. Due to the high number of fish raised at fish farms, morts are anticipated and regularly encountered. It is important not only from a health perspective to remove morts on a regular basis but it is also important from a predator avoidance perspective. Mortalities left in the net cages can attract predators that may in turn damage nets in their attempt to access the morts.

For these reasons it is important that the farm operator implement a regular mort collection program. At all the farms inspected, the mortalities were collected on a regular basis by divers.

Morts were stored on-site in sealed containers some distance from the grow-out operation and remained there until final collection for disposal. Collection times varied from weekly to every three months or in some cases, as required.

At all farms inspected, the morts collected were delivered to disposal companies off site.

There were no compliance issues identified with mort containment and disposal requirements.

E. Refuse Disposal

Operators at the farms inspected removed domestic or industrial refuse produced on site for disposal at one of the approved landfills on Vancouver Island or the Lower Mainland.

There were no compliance issues identified with refuse storage and disposal requirements at the farms inspected.

F. Sewage Treatment, Disposal and Record Keeping

The majority of fish farms have living quarters on site, and collect, treat and discharge sewage at or near the farm location. Untreated sewage has elevated biochemical oxygen demand which may negatively impact the environment and fish. This waste also contains solids that may be deposited on the ocean floor.

The FAWCR permits discharge of domestic sewage under specific circumstances. It is not to exceed 2.5 cubic meters per day, it must be treated by holding in a septic tank for two days, (or a device other than a holding tank with suspended solids not exceeding 130mg/l), the location of the sewage discharge point is at a depth no less than 15 meters below the water surface and all construction, operation and maintenance of sewage treatment and disposal are maintained.

Inspectors found that 54 of the 77 sites inspected were in compliance with these requirements Deficiencies at the remaining 23 sites included four sites where washrooms were not available, 5 sites that did not have proper holding facilities, 3 sites where the sewage discharge pipe did not meet the minimum discharge depth requirements and 14 sites where sewage maintenance records where not being kept.

G. Water Licensing

Fish farms that use freshwater from a lake, river or stream are required to hold an authorization issued pursuant to the *Water Act*.

Many of the finfish farms inspected obtained their domestic water supply from a variety of sources. These included rain water, water from lakes or streams, well water and water transported to the site. Some operations relied on a combination of these sources.

There were 34 sites that either used stream water exclusively for their domestic water supply or relied upon a combination of stream water and other sources. Operators at 23 of these sites were in compliance with water licensing requirements.

H. Wildlife Trapping - Predator Prevention and Response

Predators such as seals, sea lions and dogfish can cause significant tears in the containment nets and have been suspected as the primary cause for a number of escapes. It is the responsibility of the farmer to ensure that protective measures are implemented to prevent predator attacks.

If a farmer did not take appropriate measures against increased predator attacks, this could be construed as not taking reasonable precautions to prevent escapes, an offence under the *Aquaculture Regulation*.

Typically, salmon farm operators will use non-lethal methods to control predators at the farm site. These include the use of predator nets, shark guards, bird netting, electric fences and ensuring nets are kept taut. Despite these precautions, persistent predators may have to occasionally be destroyed. This is accomplished either through trapping or with a firearm.

Hunting and trapping is carefully regulated under the *Wildlife Act*.

Operators at two of the 77 farm sites inspected reported wildlife being trapped in the last year. In these cases problem otters were live trapped and removed. At five sites firearms were present but were not associated with predator kills and operators at another three sites advised that company contracts were in place with individuals for predator control.

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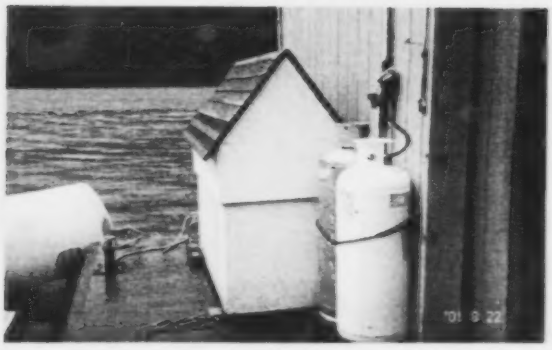
No violations were noted at the inspected sites.

I. Fuel Product Use, Storage and Containment

PHOTOGRAPH # 13



Diesel fuel with 110% containment (double walled) and protection from precipitation.

Storage of fuels is common at finfish farms as fossil fuels are widely used to run generators for electricity, boat engines and heat. The *BC Fire Code* requires that a spill containment barrier capable of containing 110% of the volume of the fuel being stored, or another adequate form must be in place.

Operators at 54 of the 77 sites had taken measures to ensure that proper secondary containment systems had been installed around fuel storage containers and generators to meet the 110% percent requirement.

Deficiencies noted included six sites where the diesel tanks were not properly contained, 12 sites for generators and 12 sites where fuel jerry cans and motor and compressor oils were not properly stored.

PHOTOGRAPH # 14

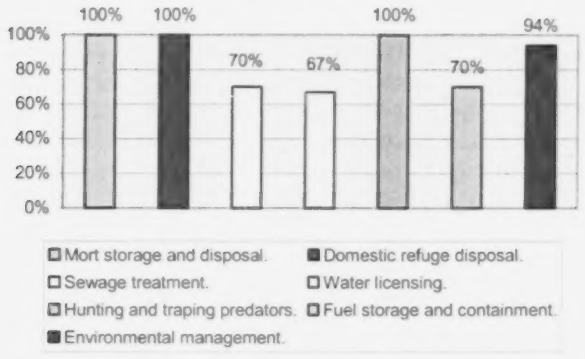
Gasoline containment and protection from precipitation

J. Environmental Management Practices

Many farm sites store a variety of petroleum products, chemicals and other products that if released into the surrounding environment could potentially have a negative impact. In an effort to minimize the severity of any spill most companies have developed spill contingency plans and have adequate equipment that would assist in managing any accidental spill.

At 72 of the 77 sites operators had an adequate spill contingency plan with equipment on site to support the plan. Deficiencies included two sites that did not have adequate equipment on site, two sites where the spill contingency plan was not on site and two sites where the spill reporting number was not posted.

GRAPH 13
WLAP COMPLIANCE POINTS



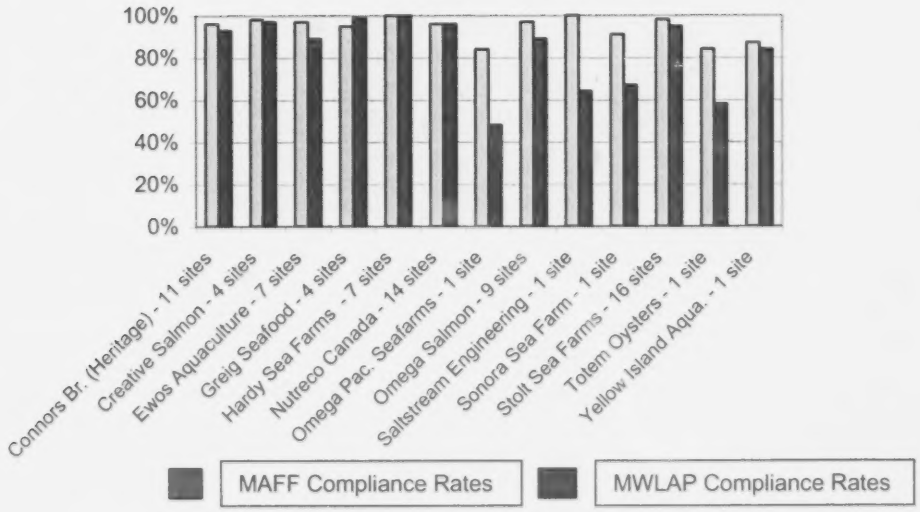
PHOTOGRAPH # 15

On-site spill kit and cleanup equipment.

F. 2003 COMPLIANCE RATE SUMMARY

The following graph illustrates the overall percentage of compliance rates with the regulatory requirements reviewed during the inspections. The percentage calculations were derived by factoring the number of compliance issues examined at each site, the number of sites and the actual number of violations noted.

GRAPH 14
COMPANY COMPLIANCE RATES


100%
80%
60%
40%
20%
0%
Connors Br. (Heritage) - 11 sites
Creative Salmon - 4 sites
Ewos Aquaculture - 7 sites
Greig Seafood - 4 sites
Hardy Sea Farms - 7 sites
Nutreco Canada - 14 sites
Omega Pac. Seafarms - 1 site
Omega Salmon - 9 sites
Saltstream Engineering - 1 site
Sonora Sea Farm - 1 site
Stolt Sea Farms - 16 sites
Totem Oysters - 1 site
Yellow Island Aqua. - 1 site
MAFF Compliance Rates
MWLAP Compliance Rates

G. 2003 COMPLIANCE NUMBERS – SITES IN COMPLIANCE

MAFF REQUIREMENTS

Table 1 provides a detailed summary of issues examined and the number of sites found in compliance during the 2003 inspection cycle. ***Appendix 11*** provides a comprehensive report of the deficiencies noted for each company at each of their operating sites inspected in 2003.

The following information is based on the annual above-water inspections and does not include any non-compliance issues that may have been identified during the dive audit program.

Information and findings of the dive audit program are provided later in this report.

TABLE #1:

MAFF Compliance Issue Assessed On Site	Sites in Compliance
Management Plan Compliance to Aquaculture Licence:	
• Approved species on site	77 of 77
• Current Licence	77 of 77
• Biomass requirements[iv]	66 of 77
• Site Configuration (Number and size of nets and their deployment)	35 of 77
Inventory Records:	
• Transport, transfer and introduction of fish	76 of 77
• Maintenance of mortality records	
• Maintenance of stock source identity records	
• Record of fish sales	
• Required records on site (not present at one site)	
Best Management Practices (BMP)	
• Companies that have developed a BMP	75 of 77
• Those with BMPs on site	72 of 75
• BMP reviewed complete in all required aspects	47 of 72

MAFF Compliance Issue Assessed On Site	Sites in Compliance
Inspection Records:	
• Records kept of daily visual inspections	76 of 77
• Records kept of all net cage inspections.	77 of 77
• Records of inspections kept after high risk activities or events including extreme environmental conditions, net cage changes, fish delivery, recurring predator attacks, vandalism, and towing	77of 77
• Net cage records kept that include inventory control number, dimensions, mesh size, records of most recent out of water servicing, records of accumulated time in the water, description and date of each underwater inspection, description, dates and reasons for all repairs	76 of 77
• Net cage maintenance, inspection and out of water service records kept on site	65 of 77
Escape Response:	
• Written escape response plan	77 of 77
• Escape plan posted	75 of 77
• Arrangements in place for recapture permits[v]	**See footnote**
Therapeutant use and Records:	
• Current treatment – groups identified	16 of 16
• Current treatment therapeutant, prescribing vet and withdrawal time identified	16 of 16
• Records kept that include licence number and holder, location of facility, species of finfish, vet name, log of drug records	73 of 74
Net Cage Configuration:	
• Water line rope primary attachment point	71 of 77
• Jump net extends at least 1 meter	73 of 77
• Sufficient weight or pressure for taut net	76 of 77
• Net cage weights distributed sufficient points	77 of 77
• Net mesh small enough to contain smallest fish	77 of 77
• Proper storage of nets	77 of 77
Net Cage Inspections:	
• Net tears immediately repaired	77 of 77
• Daily above water visual inspections completed	77 of 77
• Underwater inspections completed every 60 days	77 of 77
• Underwater inspections done before fish entry	75 of 77
• Nets permanently marked with inventory number	75 of 77

MAFF Compliance Issue Assessed On Site	Sites in Compliance
Containment Structures Inspected After: • High risk activities that include extreme environmental conditions, net cage changes, fish delivery, recurring predator attacks, vandalism, towing of active structures	77 of 77
Boat Docking: • Designated area to dock boats • Signs posted to direct boats to designated docking area • Dock sites designed to prevent net damage	77 of 77 62 of 77 77 of 77 77 of 77
Fish Handling: • Use of spotters • Use of catch nets	77 of 77 76 of 77
Predator Control: • Implemented measures to address any increase in predator attacks	77 of 77

H. 2003 COMPLIANCE NUMBERS – SITES IN COMPLIANCE - MWLAP MWLAP REQUIREMENTS

The following table provides a detailed summary of issues examined and number of sites found in compliance during the 2003 inspection cycle.

TABLE #2:

MWLAP Compliance Issue Assessed On Site	Sites in Compliance
REGISTRATION	
• Proof of Registration with MWLAP on site[ix]	63 of 77
Best Management Practices (BMP)	
• Companies that have developed a BMP	74 of 77
• Those with BMPs on site	71 of 74
• BMP reviewed complete in all required aspects	53 of 71
Blood Water Disposal:	
• Blood water properly disposed	77 of 77
Net Cleaning and Waste Disposal:	
• Proper containment of waste generated from net cleaning	74 of 77
Disinfectant Use and Disposal:	
• Proper disposal of disinfectants	77 of 77
• Proper storage of disinfectants	75 of 77
Mort Storage and Disposal:	
• Morts properly contained without spillage	77 of 77
• Morts properly disposed	77 of 77
Refuse Storage and Disposal:	
• Refuse properly stored on site	77 of 77
• Refuse properly disposed	77 of 77
Sewage Treatment and Disposal:	
• Overall compliance	54 of 77
• Washroom on site	73 of 77
• Domestic sewage properly treated prior to disposal	68 of 73
• Sewage discharged properly	70 of 73
• Sewage records maintained	59 of 73
Water Use and Licensing:	
• Approved use of water	23 of 34
Wildlife Predator Trapping:[vi]	
• Predator trapping done with appropriate permits	**See footnote**
Firearms on site for Personal Use or Hunting:[vii]	
• Firearms on site	**See footnote**
Fuel Product Use, Storage and Containment:	
• Diesel tanks protected with 110% containment	71 of 77
• Generator sets protected with 110% containment	65 of 77
• Proper storage of fuels	65 of 77

MWLAP Compliance Issue Assessed On Site	Sites in Compliance
Environmental Management:	
• Adequate spill equipment on site	75 of 77
• Spill contingency plan available	75 of 77
• Spill number posted	75 of 77

6. OTHER 2003 COMPLIANCE AND ENFORCEMENT ACTIVITIES

A. PRE-INSPECTIONS FOR NEW APPLICATIONS AND RELOCATIONS

As noted earlier, a number of salmon farming sites were considered for relocation in 2002 as recommended by the Salmon Aquaculture Review.

When the licensing authority approves a new licence application, such as for a relocation, a condition of licence prior to any introduction of fish is a satisfactory pre-start up inspection by a MAFF Inspector to ensure compliance with all regulatory and licence requirements. This includes a review of all components identified in the applicant's management plan, compliance with legislative and regulatory requirements and verification that the company has met all general licence terms and conditions and any additional conditions that may have been added.

A satisfactory pre-inspection by MAFF Inspection staff will likely be adopted as a required condition of any new Aquaculture Licence prior to commencement of operations.

B. DIVE AUDIT PROGRAM

During the 2003 inspection cycle dive audits were completed at five randomly selected sites.[viii] Dive audits are generally unannounced and consist of an experienced dive teams along with a MAFF Inspector who coordinates the inspection activity of the dive team.

The purpose of these dive audits are to assess underwater farm features and ensure that the operator is in compliance with regulatory requirements and properly managing the underwater maintenance of the containment nets, anchoring systems and other supporting infrastructure.

Dive audits focus primarily on the underwater aspects of the salmon farm where divers concentrate on the condition of net pens, net pen repairs, design and installation of the anchoring system, net weigh design and installation, condition of lines, and associated hardware along with any other significant below water features. The duration of the dives vary according to underwater visibility, size, depth and condition of the net cages. In some cases an entire day can be spent viewing the entire system while in other situations it may not be possible to view the entire site and a smaller representative portion of the system will be selected for an intensive audit.

To increase the effectiveness of the audits the divers are able to communicate directed with the MAFF Fisheries Inspectors on the surface who are linked through a video and voice communication system. The ability to communicate directly with the divers in this manner provides the

inspector the opportunity to direct the activity of the divers enhancing the inspection efforts.

The following table identifies the company, sites and dive locations of the 2003 dive audit program:

TABLE #3

Company Name	MAFF REF#	General Area	Site Name	Date Audited
Hardy Sea Farms Inc.	412	Sechelt	Salmon Inlet	March 10, 2003
Nutreco Canada Inc.	137	Quadra Island	Conville Bay	March 11, 2003
Connors Bros. Ltd. (Heritage)	1070	Alberni Inlet WCVI	Mactush Bay	March 17, 2003
Omega Salmon Group Ltd.	1351	Broughton	Marsh Bay	March 27, 2003
Omega Pacific Seafarms Inc.	270	WCVI	Jane Bay	March 31, 2003

Some of the more common issues identified during these dive audits are provided below. A more detailed summary for each site inspected can be found attached as **Appendix 16.**

1) Net tension was an issue in some cases. Excessive billowing can be a concern as it creates more potential for net snag and subsequent tearing.

2) In some cases the main anchor weights for the net pens or associated hardware were had rough edges or points that could potentially snag on the containment nets.

3) Excessive build-up of debris that can potentially come into contact and damage the containment nets.

4) Predator nets that may not be effective due to the number and or size of holes.

5) At some sites company officials were asked to review the quality of on site net repairs.

6) In some cases the predator net was deemed likely ineffective due to the weighting system used as there may not be sufficient clearance between the containment and predator nets.

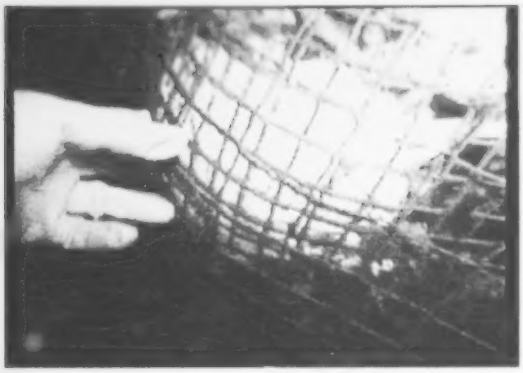
7) The build up of marine growth on lines and other hardware and infrastructure creates potential snag points and additional drag in high current situations.

Where deficiencies were noted, farm site operators were given 30 days to notify MAFF in writing that corrective measures had been implemented.

PHOTOGRAPH # 16

Dive contractor preparing for dive audit.

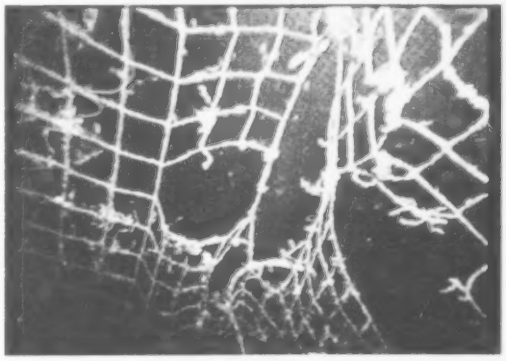
DIVE AUDIT PHOTOGRAPHS



Use of internal weights, in this cases feed bags that have been filled with beach sand.

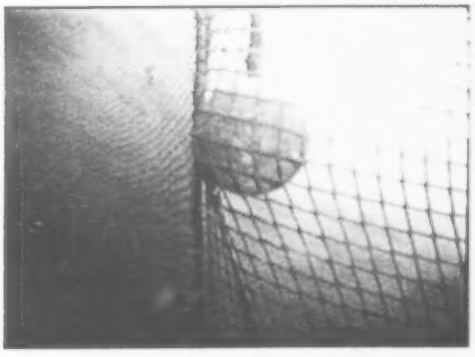
Central external weight with tie-down lines going to four net pens.

Typical hole repaired at net loft.



Holes in the predator system .

Typical external weights.



25 pound lead internal net weight checked for wear against net.

C. ENVIRONMENTAL AUDITING

During 2003, MWLAP conducted chemical and biological sampling of bottom sediments at selected farm sites. Where the chemical standards are not met or are exceeded, biological samples for marine benthic organisms are collected for compliance purposes. Results of the chemical and biological sampling will be published by MWLAP in a series of Data Reports which will be made available on its web site upon completion of the analysis.

The following farm sites were audited for compliance with environmental standards in 2003:

TABLE #4

Company	MAFF REF#	Farm Site	General Area
Connors Bros Ltd. (Heritage).	1070	Penny Creek	Alberni Inlet
Connors Bros Ltd. (Heritage).	728	Sir Edmund Bay	Broughton Archipelago
Nutreco Canada Inc.	112	Centre Cove	Kyuquot Sound
Nutreco Canada Inc.	763	Young Passage	Quadra Island/Campbell River
Omega Salmon Group Ltd.	892	Bell Island	North Vancouver Island
Omega Salmon Group Ltd.	270	Jane Bay	Barkley Sound
Omega Salmon Group Ltd.	831	Shelter Passage	Broughton Archipelago
Ewos Aquaculture Ltd.	314	Ross Passage	Clayoquot Sound
Ewos Aquaculture Ltd.	527	Saranac	Clayoquot Sound
Stolt Sea Farm Inc.	466	Arrow Pass	Broughton Archipelago
Stolt Sea Farm Inc.	467	Midsummer Island	Broughton Archipelago
Hardy Sea Farms Inc.	754	Jervis Cove	Sechelt
Hardy Sea Farms Inc.	219	Power Bay	Sechelt

D. BRANCH INVESTIGATIONS

Under provincial legislation, MAFF Inspectors or MWLAP Conservation Officers have six months from the date of the event to investigate and, if appropriate, pursue enforcement sanctions. Investigations are considered highly confidential until concluded.

Results of investigations may lead to one or more of the following outcomes:

- determination that the incident (i.e., escape) or possible violation does not warrant any enforcement sanction;
- issuance of a written warning;
- issuance of one or more violation tickets;
- referral to appropriate regulatory agencies such as MWLAP, LWBC or DFO;
- submission of a report to Crown Counsel with recommended charges; or,
- recommendation to the licensing authority for aquaculture licence suspension or revocation.

From January 2003 to December 2003, Licensing and Compliance Branch initiated a total of 488 case files. Cases varied from finfish and shellfish inspections to possible non-compliance under the *Fisheries Act, Aquaculture Regulation, Fish Inspection Act, Fish Inspection Regulation and various other Provincial Statutes.*

Statistics on numbers of investigation are as follows:

E. INVESTIGATIONS

- 77 active finfish farm sites were inspected;
- 44 shellfish sites inspected;
- 181 cases pertained to finfish aquaculture inspections and investigations including escape incidents;
- 93 cases pertained to shellfish aquaculture inspections and investigations;
- 185 cases pertained to commercial fish licensing;
- 29 cases pertained to marine plant, wild oyster harvesting, work tracking, or waste management inspections and investigations;
- 32 violation tickets/warning tickets were issued to various finfish, shellfish and commercial licence holders;
- One (1) warning letter;

- 3 cases were referred to Crown Counsel for charges approval, those cases are now before the Courts;
- 57 referrals to various agencies such as MWLAP, LWBC and DFO;
- Number of fish escapes reported in 2003 totalled 40 fish, dramatic decrease over the previous years.

Status of 2003 Investigations:

The following table shows companies that have been issued violation tickets or warnings for non-compliance by MAFF Inspectors and where the tickets have been paid without dispute. It does not include any open investigations currently being conducted by MAFF or MWLAP compliance and enforcement staff.

TABLE #5:

Licence holder	Act or Regulations	Date	Action	Fine
512004 BC Ltd.	Fisheries Act Section 13 (1)	January 26, 2003	Violation Ticket	$173
Centennial 2000 Inc.	Fisheries Act Section 13 (1)	May 1, 2003	Warning Ticket	n/a
Grieg Seafoods BC Ltd.	Fisheries Act Section 25 (2)	April 29, 2003	Warning Ticket	n/a
Grieg Seafoods BC Ltd.	Fisheries Act Section 25 (2)	April 29, 2003	Warning Ticket	n/a
Grieg Seafoods BC Ltd.	Fisheries Act Section 25 (2)	April 30, 2003	Warning Ticket	n/a
Grieg Seafoods BC Ltd.	Aquaculture Regulation Section 4 (1)	n/a	Warning Letter -	n/a
Hatfield Biotechnology Ltd.	Aquaculture Regulations Section 3 (2)	November 1, 2003	Violation Ticket	$173
Heritage Salmon Ltd.	Fisheries Act Section 25 (2)	June 5, 2003	Violation Ticket	$115
Kitasoo Aquafarms Ltd.	Fisheries Act Section 25 (2)	June 26, 2003	Warning Ticket	n/a
Kyuquot Sound Farms	Fisheries Act Section 25 (2)	May 28, 2003	Violation Ticket	$115
Nutreco Canada Inc.	Fisheries Act Section 25 (2)	April 17, 2003	Warning Ticket	n/a
Nutreco Canada Inc.	Fisheries Act Section 25 (2)	April 17, 2003	Violation Ticket	$115
Nutreco Canada Inc.	Fisheries Act Section 25 (2)	April 17, 2003	Violation Ticket	$115
Nutreco Canada Inc.	Fisheries Act Section 25 (2)	April 24, 2003	Violation Ticket	$115
Nutreco Canada Inc.	Fisheries Act Section 25 (2)	April 24, 2003	Violation Ticket	$115
Nutreco Canada Inc.	Fisheries Act Section 25 (2)	June 26, 2003	Violation Ticket	$115
Stolt Sea Farm Inc.	Aquaculture Regulation Section 3(2)	April 8, 2003	Warning Ticket	n/a
Stolt Sea Farm Inc.	Aquaculture Regulation Section 4 (1) b	October 22, 2003	Violation Ticket	$173

7. CONCLUSION

During the 2003 inspection cycle, agencies found generally acceptable levels of compliance, with most inspection points found to be in the 80 to 90 percent range.

For all identified non-compliance issues, companies have been provided with a letter and copy of the compliance report outlining inspection findings and necessary remedial action. The majority of finfish farm operators are in the process of, or have implemented, necessary actions identified during inspections. Some follow-up inspections have been completed where companies have failed to comply with remedial instructions or failed to comply within the requested timeframe. In some cases, appropriate enforcement sanctions have been applied, including the issuance of violation tickets, and in some cases, referrals to MWLAP have been made.

In summary, many of the non-compliance issues identified during 2003 are correctable. In conjunction with some agency changes (such as streamlined site configuration approval processes), continued enhancements to the compliance and enforcement regime, and continued communication with industry, it is anticipated compliance levels will continue to improve in to the 2004 inspection cycle.

Provincial government agencies are committed to ensuring the aquaculture industry meets our regulatory objectives in an environmentally sustainable and socially acceptable manner.

[i] Formerly the *Aquaculture Waste Control Regulation*.

[ii] ***Appendix 9*** provides a detailed summary of all record keeping requirements and the storage location of these records.

[iii] Compliance with drug record keeping, and inventory records are examined in other sections within this report.

[iv] As outlined in the report, many sites had submitted management plan amendments prior to inspections conducted in 2003; however, for the purpose of MAFF inspections, sites were identified as out of compliance if amendments had not yet been approved by regulatory authorities. In addition, many sites have since submitted amendments as a result of inspection.

[v] Recapture permits are not site specific, instead they are issued to the company. In 2003 DFO issued seven ZZA permits. The ZZA permits were valid only for Atlantic salmon recapture attempts.

[vi] Live trapping was reported at two sites.

[vii] At five sites firearms were present but not associated with predator kills. At three sites company officials indicated company contracts were in place with individuals for predator control.

[viii] An additional six dive audits were conducted in November 2003. The findings of these audits will be presented as part of the 2004 annual inspection report.

[ix] MWLAP advises that in 2003 all sites were registered. Deficiency noted is failure of the company to provide verification of registration.

Service Agreement
on
Coordination of Compliance and Enforcement Programs

between

Ministry of Agriculture, Food and Fisheries,
Ministry of Water, Land and Air Protection,
Ministry of Sustainable Resource Management, and
Land and Water British Columbia Inc.

1. Agreed Upon Vision:

A sustainable aquaculture industry that meets high standards for environmental protection and has a high level of public confidence in the compliance and enforcement role of government.

2. Lead Agency Concept:

The Ministry of Agriculture, Food and Fisheries is the lead agency for aquaculture development in British Columbia. Critical functions and authorities also reside within the Ministry of Water, Land and Air Protection (MWLAP), the Ministry of Sustainable Resource Management (MSRM), and Land and Water British Columbia Inc. (LWBC), hereafter referred to as the "agencies".

The lead agency concept is designed to deliver services, permits and approvals to industry through a single window via service agreements, delegations of authority and pre-approval agreements with other agencies in all three levels of government.

3. Development of Service Agreement:

Provincial government representatives are committed to coordinating responsibilities in the area of compliance and enforcement to eliminate inter-agency overlaps, reduce duplication of efforts by single agency presence in the field for compliance activities, increase efficiencies, and to demonstrate a strong, integrated and accountable compliance and enforcement regime.

The agencies wish to identify and clarify respective roles regarding finfish and shellfish aquaculture compliance and enforcement activities, outline specific responsibilities, identify projected resource requirements, and develop protocols for dealing with issues that may arise on occasion.

3. Development of Service Agreement - continued:

This multi-signatory Service Agreement sets out the agreed upon approach between agencies of interest, outlines specific roles and responsibilities, training requirements, implementation timelines and required communication and protocols in responding to identified issues.

4. Goals of Service Agreement:

Development of this Service Agreement is based on the following common goals:

- efficient use of staff resources to minimize duplication;
- one window approach to aquaculture development;
- high level of compliance;
- early intervention to avoid non-compliance;
- effective enforcement, successful prosecution and rehabilitation where required;
- public confidence; and,
- transparency.

5. Performance Based Standards:

This Service Agreement recognizes that government is committed to the development of performance based standards in three key areas: waste management; fish health; and escape prevention. This Service Agreement also recognizes that agencies are working towards a performance-based management regime that acknowledges the key environmental standards.

Signatories to this agreement also acknowledge that application of a combination of regimes, including "rules-based" and "results-based" will be required on an interim basis, until government is satisfied that industry has either achieved or exceeded objectives in the areas of waste management, fish health and escape prevention.

6. Environmental Monitoring

For the purpose of this Service Agreement, it is agreed that environmental monitoring activities pursuant to the *Aquaculture Waste Control Regulation* will remain with the lead regulatory agency, MWLAP, with participation by MAFF Inspection staff. Similarly, the administration of the dive audit program will remain with the lead regulatory agency, MAFF.

6. Environmental Monitoring – continued:

Environmental monitoring activities are to be conducted by biological monitoring staff (technicians, biologists, statisticians) at MWLAP, and, for this reason, are not considered part of the Service Agreement. Specific environmental monitoring activities include:

- conducting reviews of industry environmental monitoring data;
- annual monitoring of sediments at salmon farms;
- development of appropriate sampling protocols and quality assurance/control programs;
- establishing priorities for ministry monitoring of sediments at salmon farms; and,
- conducting environmental sampling at salmon farms, providing feedback to facility.

The agencies agree to conduct joint environmental monitoring activities on site in order to achieve harmonization between compliance inspections and on-site activities. This agreement is subject to operational considerations such as scheduling.

The specific provision on Environmental Monitoring will be reviewed at the end of the first year to ensure identified objectives are being met in the most effective and efficient manner.

7. Compliance and Enforcement – Roles and Responsibilities:

For the purpose of this Service Agreement, it is agreed that MAFF has the lead role in compliance and that MWLAP has the lead role in enforcement. MWLAP will also assume the lead role in consultation with MAFF when environmental conditions at marine finfish facilities exceed the "trigger" level established in the *Aquaculture Waste Control Regulation*.

"Compliance" is defined as conducting the following activities:

- site specific management plan development;
- awareness, education, promotion and training activities;
- partnership and practices activities;
- monitoring, inspections and audits;
- administrative remedies pertaining to agency's licensing authority;
- early intervention to prevent non-compliance;
- provision of data, samples, monitoring results, inspection reports, and fish escape reports to the lead enforcement agency based on a predetermined schedule; and,

7. Compliance and Enforcement – Roles and Responsibilities - continued:

- support for enforcement actions including development of procedures and provision of information, technical support and expert witness support for investigation to ensure the ability of MWLAP to achieve successful prosecution.

"Enforcement" is defined as carrying out the following activities:

- verifying and substantiating an alleged offence;
- recommending and implementing necessary enforcement responses.

Specifically:

a) MAFF Compliance staff will serve as the lead in developing site specific management plans and conducting all finfish and shellfish inspections, monitoring (subject to section 6) and audits on behalf of MWLAP, LWBC, and MSRM.

a) MWLAP Enforcement staff will serve as the investigative lead on all enforcement activities associated with formal prosecutions, court orders and administrative penalties for finfish and shellfish aquaculture on behalf of MAFF, LWBC and MSRM.

MAFF and MWLAP Compliance and Enforcement Managers will work with LWBC, MSRM and federal DFO officials to harmonize compliance and enforcement activities and develop a protocol on sharing information, participating in inspections and enforcement as required, and addressing common issues of interest.

8. Transition from Inspection to Investigation:

MAFF Compliance staff will contact MWLAP Enforcement staff to initiate an investigation when instance(s) of non-compliance by an operator requires further review or action by the lead agency for enforcement. Specific responses will be outlined in a matrix to be developed by respective Compliance and Enforcement Managers.

It is anticipated this transition will involve consultation, a request for shared inspections and/or a request to consider enforcement sanctions such as formal prosecutions. MAFF will provide a support role to MWLAP enforcement staff as required when a request for an investigation has been made.

8. Transition from Inspection to Investigation - continued:

For the purpose of this Service Agreement, MWLAP Enforcement staff and MAFF Inspection staff will regularly communicate on status of inspections and files and activities undertaken by either agency. MAFF Inspection staff may issue violation tickets as defined within the matrix. The matrix will indicate under which circumstances agencies must consult prior to proceeding with enforcement action.

Escapes:

- MAFF Compliance staff will attempt to visit sites within 72 hours of discovery of an escape incident. Where possible, particularly with escape incidents that are viewed as "significant", MWLAP Enforcement staff will attend jointly with MAFF Compliance staff.

- The role of MAFF Compliance staff will be to ensure appropriate measures have been implemented to preclude further escapes and provide technical support for the investigation where required.

- The role of MWLAP Enforcement staff will be to assess the state of compliance leading up to and including the actual event, and to conduct a legal investigation to determine the appropriate enforcement response.

Appendix I provides the detailed compliance continuum and breakdown of agency activities and responsibilities.

9. Communication and Protocols:

In order to ensure an environment of trust and respect, effective communication between agencies is necessary.

It is agreed:

- that compliance and enforcement activities and responsibilities are clearly defined and communicated with all staff;

- where an aquaculture activity has resulted in a significant impact of mutual concern, a jointly agreed upon briefing note will be forwarded to the Executive of all agencies. Inter-agency compliance and enforcement staff will work together to develop the briefing notes;

9. Communication and Protocols - continued:

- that information regarding an investigation being pursued by MWLAP staff is considered highly confidential and distribution must be limited to only those operational staff involved in the file. It is agreed that if charges are approved by Crown on an investigation, that Executive and Communications staff will be advised once charges have been sworn in and the company has been advised;

- that communication of data, samples, monitoring results and inspection reports between the agencies will be transparent, timely and direct, to allow either agency to make independent judgements about the state of compliance at any time;

- that all compliance and enforcement activities are complementary and mutually supportive in nature;

- that clear policies and procedures are created that will outline how agencies will communicate with one another; and,

- that the agencies will be mutually involved in the development of compliance strategies and workplans and agree that MAFF/LWBC/MSRM compliance staff (as appropriate) will be consulted on decision points regarding appropriate or possible enforcement responses by MWLAP staff.

10. Resolving Differences:

Where conflict arises relative to different opinions within the scope of relevant authorities or appropriate sanctions, it is agreed that differences are to be resolved as quickly and efficiently as possible by staff involved in discussions, and at a maximum, within 30 days of the issue being identified.

If satisfactory resolution can not be achieved, matters will be raised to the Regional Enforcement Manager for MWLAP, the Manager of Aquaculture Licensing and Compliance in MAFF, the Regional Manager of MSRM, and the Regional Director of LWBC.

If the issue in question can not be resolved within 14 days at this level, it will be brought forward to respective Assistant Deputy Ministers for discussion and resolution within 14 days.

11. Proposed Implementation Timelines:

January, 2002	-	Approval in principle to coordinated compliance and enforcement regime by Deputy Ministers.
February, 2002	-	Development of Service Agreement between agencies of interest.
Feb./March, 2002	-	Approval and sign-off of Service Agreement between agencies of interest. Approval by CORE review table.
March, 2002	-	Development of "Compliance Strategy Matrix".
April to July, 2002	-	Training for both staff – will be conducted by on-site training inspections and participating in one or more joint enforcement investigations
	-	Arrange appropriate powers and delegated authorities for staff.
April, 2003	-	Transition phase complete

12. Training Requirements:

Agencies agree that joint training for appropriate staff will be undertaken to deliver on this Service Agreement.

13. Delegation of Authorities:

To effectively administer the numerous statutes that apply to finfish and shellfish aquaculture, delegation or appointment of authority is necessary. MAFF Inspectors will require specific powers to collect inspection data and specific delegated authorities to inspect operations pursuant to both LWBC's and MWLAP's statutory framework.

In most cases, legislation appears to provide the appropriate Minister power to delegate authorities.

Appropriate agencies will work with the Aquaculture Licensing and Compliance Manager to move forward and expedite necessary approvals for MAFF Inspection staff to secure delegated authorities.

14. Resource Requirements:

For the inception of this Service Agreement, it is assumed that resource requirements between agencies will remain the same. Discussions on ability of the agencies to meet identified objectives will occur at the end of the first year of this agreement.

15. Transparency of Data:

This Service Agreement recognizes the requirement to provide the public with clear, transparent and accountable data on the state of compliance for finfish and shellfish aquaculture industries.

It is agreed that information collected and subsequent enforcement results will be collected and submitted in a joint agency report for distribution to industry and the public via an acceptable medium. The responsibility for completion of this Annual Report will reside with the appropriate Managers/Directors in the agencies. It is expected that the first joint report will be completed and published on or before April, 2003.

16. Service Agreement Requirements:

Immediate Requirements:

a) Agreement and sign-off on all requirements set out in Implementation Timelines, above.

b) Draft policies and procedures on how and when agencies will communicate.

c) Develop overall compliance strategy and workplan for inspection cycle commencing 2002, incorporating necessary training requirements in the workplan.

d) Confer necessary delegated authorities on MAFF Inspection staff.

Quarterly Requirement:

a) Meeting or conference call with respective Managers/Directors to discuss issues and resolve concerns.

b) A regular quarterly review meeting between appropriate Assistant Deputy Ministers and Deputy Ministers will be necessary to ensure the goals set out in this Service Agreement are being achieved.

17. Service Agreement Requirements - continued:

Annual Requirements:

a) All elements contained within the Service Agreement will be reviewed annually by respective Managers/Directors responsible for compliance and enforcement. Recommended changes to scope of agreement will be forwarded to appropriate Executive staff for discussion, agreement and implementation. Any agreed upon changes will be submitted via amended Service Agreement with appropriate signatory sign off.

b) Review of respective resources, compliance strategy and workplan elements will be conducted to determine if resources are appropriately allocated. Any reallocation requests will be forwarded to respective Executive staff for review, discussion and approval.

c) Respective agency Managers/Directors responsible for compliance and enforcement will measure the effectiveness of both the compliance and enforcement programs to ensure identified objectives are being met, including licensing and legislative. Adjustments in workplan activities will be modified as appropriate.

18. Termination of Service Agreement:

It is agreed that the Deputy Minister of Water, Land and Air Protection or the Deputy Minister of Agriculture, Food and Fisheries, the Chief Executive Officer for Land and Water British Columbia Inc. and the Deputy Minister of Ministry of Sustainable Resource Mangement may terminate this Service Agreement by providing 90 days notice in writing.

19. Signatories:

For Ministry of Agriculture, Food and Fisheries

Deputy Minister
Agriculture, Food and Fisheries

March 28/02
Date

For Ministry of Water, Land and Air Protection

Deputy Minister
Water, Land and Air Protection

Mar 28/02
Date

For Ministry of Sustainable Resource Management

Deputy Minister
Sustainable Resource Management

March 28/2002
Date

For Land and Water British Columbia Inc.

Chief Executive Officer
Land and Water British Columbia Inc.

March 28/2002
Date

Appendix I

Service Agreement
Breakdown of Compliance Continuum
Activities by Agency

Ministry of Agriculture, Food and Fisheries

Awareness, Education, Promotion and Training Activities:
- advising public of the requirements of the law;
- consultations with parties affected by the law;
- communications strategies and public reporting of the compliance program;
- training programs for staff, clients and other interested parties.

Partnerships and Practices:
- developing cooperative partnerships and agreements contributing to government objectives, including building on and coordinating activities with federal authorities;
- building on reliance on professionally qualified persons;
- promoting industry best management practices (Codes of Practice/Conduct);
- promoting self-monitoring/auditing and reporting on practices;
- promoting International Certification.

Monitoring, Inspections, Audits:
- receiving information/data (with exception of environmental monitoring data) provided by finfish or shellfish sector and forwarding to appropriate regulatory agency;
- conducting all inspections and follow-up inspections (with exception of environmental monitoring program) and audits in the field on behalf of LWBC, MSRM and MWLAP;
- conduct follow up with operators on results of inspections and required remedial actions – identified non-compliance issues under MWLAP's regulatory authority will be referred for discussion and/or appropriate follow-up to MWLAP;
- acting as initial contact for public and industry complaints with respect to issues provided under finfish and shellfish licence terms and conditions, the provincial *Fisheries Act*, *Aquaculture Regulation*, and in the case of shellfish aquaculture, the *Land Act*; and,
- dependent on necessary mitigative measures for farms in excess of chemical trigger, MAFF Inspection staff may conduct monitoring and inspections.

Administrative Remedies:
- aquaculture licence suspension or cancellation proceedings.

Appendix I - continued

Service Agreement
Breakdown of Compliance Continuum
Activities by Agency

Ministry of Water, Land and Air Protection

Mitigative Measures:

- evaluation of remediation plans (where required) when farms exceed the chemical trigger prescribed in the *Aquaculture Waste Control Regulation*;
- implementation of mitigative measures (where required) for farms that have exceeded the chemical trigger and/or standards.

Enforcement:

- verifying and substantiating an alleged offence;
- implementing necessary enforcement responses on behalf of all finfish and shellfish aquaculture activities in the province, including finfish escapes. Enforcement activities are defined as warnings, tickets, administrative penalties, orders and formal prosecutions for governing statutes and regulations.
- Referring investigative files to the appropriate agency where it is determined that the application of administrative sanctions (penalties, license/tenure suspension/cancellation) are appropriate.

LWBC and MSRM

Both agencies will provide MAFF Inspection staff and MWLAP Enforcement staff with necessary information in completing activities. Examples may include digital aerial photographs and licence and tenure documents.

- Amendment of tenure boundaries and license conditions to resolve minor non-compliance.

- Suspension/cancellation of water licenses or land tenures and imposition and recovery of tenure fees for trespass.

- Support for enforcement actions including development of procedures and provision of information, technical support and expert witness support for investigation to ensure the ability of MWLAP to achieve successful prosecution.

Appendix II

Mutual Areas of Concern – Compliance and Enforcement[1]
MWLAP and MAFF

Issue:
Operation conducted within approved tenure boundaries
Farm sites well marked and posted
Access to water so as not to impede riparian rights
Diligent Use
Environmental Monitoring
Method and location of blood water and disposal
Method and location of net cleaning, waste treatment and disposal
Use of freshwater from a stream/lake
Feed Handling, type and volume
Method of mort disposal and location
Wildlife/predator destruction, disposal method and location
Firearm and ammunition storage and possession
Sewage treatment and disposal
Method and location of refuse storage and disposal
Spill containment for hazardous materials including footbaths
Environmental management
Chemical and fuel storage
Premises appropriately licensed for aquaculture
Culturing approved species with management plan(s)
Compliance with licence conditions and special provisos
Annual or quarterly reporting requirement compliance
Harvested product appropriately tagged (shellfish)
Product sold to registered Fish Processors
Appropriate use of tenure (mitigate laundering of illegally harvested product)
Record keeping requirements such as stock inventory, mortality records
Escape prevention and response programs
Boat operations
Net cage deployment, including net weighting and system anchoring
Predator avoidance plans including feed storage and predator control
Net maintenance, marking and record keeping
Daily inspections and logs
Administration of drugs
Compliance with management plans, including site configurations, biomass and approved species

[1] Mutual areas of concern also include both finfish and shellfish issues reviewed by MAFF and MWLAP on behalf of other agencies such as LWBC (i.e., operation conducted within approved tenure boundaries).

MINISTRY OF AGRICULTURE, FOOD AND FISHERIES

FINFISH AQUACULTURE LICENSING POLICIES AND PROCEDURES FOR APPLICATIONS

Created: August 31, 2000
Revised: August 25, 2003

Note: This document is subject to regular review and revision.

1. Purpose

The purpose of the policy is to provide guidance to licensing authorities on the consideration of licences for the purposes of marine finfish aquaculture.

This policy is intended to assist in the exercise of discretion of the licensing authority and does not purport to alter any provisions of the *British Columbia Fisheries Act, the British Columbia Aquaculture Regulation*, or other relevant legislation.

2. Legislative and Regulatory Authority

British Columbia Fisheries Act
British Columbia Aquaculture Regulation

3. Decision-Makers

Minister of Agriculture, Food and Fisheries: Fisheries Act
Manager, Licensing and Compliance Branch: Delegated Authority
Senior Licensing Officer: Delegated Authority
Aquaculture Licensing Specialist: Delegated Authority

4. General Principles Governing the Exercise of Authority to Issue a Salmon Aquaculture Licence

- Fairness
- Transparency
- Efficiency
- Accountability

5. Application for Salmon Aquaculture Licence

5.1. Application form and information required

The applicant must complete a Commercial Finfish Aquaculture Management Plan ("Plan"). The Plan is the application form for an aquaculture licence and also, where required, a Crown land tenure.

The Plan is submitted to the Ministry of Agriculture, Food and Fisheries (MAFF).

MAFF may request further information that assists in the review and adjudication of the application.

5.2. Questions and Assistance

MAFF's Aquaculture Development Branch will work with the applicant to provide any required assistance in completing the Plan.

6. Referrals

The Plan may be referred to other government departments and agencies for review and comment. These agencies may include the federal Department of Fisheries and Oceans, the BC Ministry of Aboriginal Affairs, the BC Ministry of Water, Land and Air Protection, Land and Water BC Inc., local governments, and other agencies and organizations as appropriate.

Where the application has a potential to impact a First Nation's rights or interests, First Nations will be consulted in accordance with the applicable First Nations consultation protocols.

7. Public notice and consultation

Reasonable efforts will be made to notify affected parties and provide them with an opportunity to comment on the application.

MAFF may require the applicant to provide public notice of the proposed application in a manner that is acceptable.

8. Applicant's Response

The applicant will be provided with an opportunity to respond to any relevant material or information provided through the referral and public consultation process.

9. Decision

The Minister or delegated licensing authorities may, upon receipt of an application for a salmon aquaculture licence:

- issue a salmon aquaculture licence on terms and conditions that the Minister or licensing authority deems reasonable in the circumstances;
- deny the application; or
- decline to make a decision and refer the Plan back to the applicant for further information.

The applicant will be notified of the decision in writing, with reasons as appropriate.

10. Issuance of a Salmon Aquaculture Licence if in the Public Interest

Given that a salmon aquaculture licence confers a right to carry on the business of commercial aquaculture using a valuable public resource, a licence should only be issued if it is in the public interest to do so.

In deciding whether it is in the public interest to issue a salmon aquaculture licence, the licensing authority should consider the following paramount principles:

- Protection of public health and safety;
- Protection of the environment;
- Sustainable economic development.

11. Assessment of an Application for a Salmon Aquaculture Licence

In assessing an application, the licensing authority may consider any of the following:

11.1. Requirements of the *Fisheries Act and Aquaculture Regulation*

The licensing authority may consider whether the applicant has met all the requirements of the *Fisheries Act and Aquaculture Regulation*.

11.2. Completion of Forms

The Plan and any supporting documentation should be complete prior to the application being considered by the licensing authority.

11.3. Suitability of Site/Facilities for Proposed Aquaculture Operation

Based on the recommendations of Aquaculture Development Branch staff, the licensing authority should consider whether the proposed site has the biophysical capacity to support the proposed operation.

11.4. Past or Demonstrable Performance of Applicant

This may include a review of the following:

- Whether the operator has any previous convictions under the provincial *Fisheries Act, Aquaculture Regulation* or other relevant legislation;
- Whether the operator has been the subject of any aquaculture licence suspensions, cancellations or refusals to issue licences in accordance with Sections 18 or 19 of the *Fisheries Act*;
- Whether there are any outstanding Fisheries Act fees or royalties owed to the Crown in relation to any other aquaculture or commercial seafood licences currently or previously held by the applicant;
- The financial capacity and stability of the applicant to support the proposed operation, including liability insurance;
- That the applicant has appropriate and sufficient experience/qualifications in aquaculture operations.

11.5. Comments from Referrals

The licensing authority should consider the comments of all parties consulted in the referral process (refer to section 6, above).

11.6. Public Input/Comments

The licensing authority may consider the impact of the proposed operation on other uses, users and resources within the area of operation.

The licensing authority may consider the adequacy of public notice and public input.

The licensing authority may consider the nature and extent of local community support for the proposed operation.

11.7. Economic and Employment Benefits

The licensing authority may consider the significance of the contribution of the operation to the local and provincial economy. This may include an identification and review of the impact on secondary businesses and industries.

The licensing authority may consider whether the proposed operation will involve technological innovations or enhancements that may lead to improvements in the standards of operation for the salmon aquaculture industry.

11.8. Escape Prevention, Detection and Response

The licensing authority may consider the adequacy of the applicant's measures and plans regarding the prevention, detection and response to escapes of finfish.

11.9. Consultations with other individuals and agencies

The licensing authority may consult with other individuals or bodies as deemed appropriate. They may include:

- The Aquaculture Biologist, Aquaculture Development Branch, or equivalent;
- The Ministry of Agriculture, Food and Fisheries Fish Health Veterinarian.

11.10. Other Relevant Factors

The licensing authority may also consider any other factors relevant to the specific circumstances of each case.

12. Terms and Conditions of Licence

The licensing authority may issue a licence on terms and conditions deemed appropriate in the circumstances.

13. Reporting and Monitoring

MAFF Fisheries Inspectors will ensure compliance with the *Fisheries Act*, *Aquaculture Regulation*, and terms and conditions of the aquaculture licence through reporting and the conducting of regular inspections and other monitoring activities as appropriate, including spot audits.

Any noted activities of non-compliance will be reported to the Senior Licensing Officer.

Note: A pre-operation inspection by a MAFF Fisheries Inspector will be required for any new operation.

14. Renewal of Existing Licences

In considering renewal of an existing licence, the licensing authority may apply any or all of the policy as appropriate in the circumstances.

15. Suspension and Revocation

Licences may be suspended or revoked in accordance with section 18 of the *Fisheries Act*.

Salmon Farm Relocation Summary Report
(As of Jan 15, 2004)

The salmon farms on this list have been identified by the Province of British Columbia for priority relocation for either environmental or social reasons. The reference numbers in brackets are Crown land tenure file numbers from Land and Water BC. For further information on finfish aquaculture tenuring go to – **http://www.lwbc.bc.ca/02land/tenuring/aquaculture/finfish/index.html**

a. Completed Relocations/ Remediation Mitigations

Company	Proposed Relocation Site	LWBC Status	Agency Referrals Sent	CEAA Status	Moving from
Kitasoo Aquafarms/ Marine Harvest	Jackson Passage (6406814)	Complete May 16, 2000	Apr. 17, 2000	Complete Oct 12, 2000	Kanish Bay (1402860)
Liard Aquaculture (Omega Salmon Group)	Hardwicke 'B' (1409321)	Complete Dec. 31, 2000	May 5, 1999	Complete Sept. 18, 2000	Chancellor Channel 'A' (1407982)
Omega Salmon Group Ltd.	Marsh Bay (1407749)	Complete Sept. 28, 2000	May 9, 2000	Complete Feb. 28, 2001	Sansum Narrows (1405114)
Stolt Sea Farms	Doctor Islets (1408758)	Complete Apr. 27, 2001	July 6, 2000	Complete Sept 11, 2001	Carrie Bay (1404990)
Omega Salmon Group Ltd.	Robertson Island (1407822)	Complete Dec. 31, 2000	Jun 30, 2000	On Hold at Client's request	Redonda Bay (2403801)
Kitasoo Aquafarms/Marine Harvest	Arthur Island (6406836)	Complete Oct. 5, 2001	Aug. 9, 2000	On Hold at Client's request	Orchard Bay (1405412)
Creative Salmon Company Ltd.	Fortune Channel, Clayoquot Sound (1409666)	Complete Oct. 19, 2001	Feb. 5, 2001	In progress Advanced	Fortune Channel (1403915)
Homalco First Nation (Heritage Aquaculture Ltd is a business partner)	Downey Range (2407768)	Completed Oct 17, 2002 as a two year experimental licence	Nov 17, 2000	In progress Mid point	Penny Creek (1406618)
Stolt Sea Farms	Humphrey Rock (1409707)	Tenure offer accepted Feb. 7, 2002 subject to Federal approvals	Apr. 10, 2001	Complete March 2003	Eden Island (1405020)
Omega Salmon Group Ltd.	Masterman (1411041)	Tenure offered June 18, 2002 subject to Federal approvals	Dec. 31, 2001	On Hold at Client's request	Loughborough, paired site (1406566)
Target Marine	Ahlstom Point, Jervis Inlet (2408042)	Tenure offered Aug 13, 2002 subject to Federal approvals	Mar. 25, 2002	In progress Mid-point	Hardy Island (2402613)
Target Marine	Culloden Point, Jervis Inlet (2408043)	Completed Jan 14, 2004	Mar. 25, 2002	Complete January 2004	Hardy Island (2402615)
Omega Salmon Group Ltd.	Goletas Channel (1404918)	Client has resolved conflict with Park boundary and is applying for Park Use Permit	Sept 16, 2002	In progress Preliminary	Stayed on site by resolving anchoring conflicts

DFO = Fisheries and Oceans Canada
NWPA = Navigable Waters Protection Act
MP = Marine Commercial Finfish Aquaculture Management Plan

CEAA = Canadian Environmental Assessment Act
FN = First Nation government
Preliminary, Midpoint & Advanced = CEAA progress
CSRD = Comox Strathcona Regional District

Salmon Farm Relocation Summary Report
(As of Jan 15, 2004)

a. Completed Relocations/Mitigations (continued)

Company	Proposed Relocation Site	LWBC Status	Agency Referrals Sent	CEAA Status	Moving from
Marine Harvest	Markale Passage, Hohoae Island (1411078)	Completed Feb 4, 2003	July 29, 2002	Completed July 2003	Samsun Narrows (1406755)
Stolt Sea Farms	Victoria Lake (1409830)	Completed Apr 4, 2003	Nov. 22, 2001	In progress Mid-point	Keogh Lake (1403242)
Heritage Aquaculture Ltd.	Simoon Sound (1403895)	Client has resolved conflict by amending the management plan to a smolt entry site		In progress Preliminary	Stayed on site by resolving conflicts by amending use.
Heritage Aquaculture Ltd.	Cypress Harbour (1405381)	Client has resolved conflict by amending the management plan to a brood site		In progress Preliminary	Stayed on site by resolving conflicts by amending use.
Heritage Aquaculture Ltd.	San Mateo (1401284)	Client has resolved conflict by amending the management plan to a smolt entry site		In progress Preliminary	Stayed on site by resolving conflicts by amending use.
Stolt Sea Farms	Potts Bay (1406655) brood	Client has resolved conflict by amending the management plan to a brood site	January 2004	In progress Preliminary	Stayed on site by resolving conflicts by amending use.
Stolt Sea Farms	Mound Island shellfish (1404264)	Client has resolved conflict by amending the management plan to a shellfish	January 2004	In progress Preliminary	Stayed on site by resolving conflicts by amending use.
Stolt Sea Farms	Broughton Island (1403326) shellfish	Client has resolved conflict by amending the management plan to a shellfish	January 2004	In progress Preliminary	Stayed on site by resolving conflicts by amending use.
Omega Salmon Group Ltd	SE Fredrick Arm (2402966)	Client has resolved conflict by amending the management plan to a smolt entry site		In progress Preliminary	Stayed on site by resolving conflicts by amending use.

b. Relocations in Progress

Company	Proposed Relocation Site	LWBC Status	Agency Referrals Sent	CEAA Status	Moving from
Stolt Sea Farms	Dinner Point, Knight Inlet (1411082)	Client is preparing to submit new data to update the proposed application	Dec 20, 2002	In progress	Mistake Island (1404780)

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Salmon Farm Relocation Summary Report
(As of Jan 15, 2004)

c. Relocations not yet Commenced

Company	Proposed Relocation Site	Status	Moving from
Creative Salmon Company	Gov't agencies awaiting MP	Proponent is meeting with FN and preparing to submit MP	McCaw Peninsula aka Tranquil Inlet (1406335)
EWOS	Gov't agencies awaiting MP	Proponent is meeting with FN and preparing to submit MP	Goodridge Island (1401188)
EWOS	Gov't agencies awaiting MP	Proponent is meeting with FN and preparing to submit MP	Sooke Basin (1403903)
EWOS	Gov't agencies awaiting MP	Proponent is meeting with FN and preparing to submit MP	Belcher Point (1403297)
EWOS	Gov't agencies awaiting MP	Proponent is meeting with FN and preparing to submit MP	Obstruction Island (1403679)
Marine Harvest Canada/Nutreco	Gov't agencies awaiting MP	Proponent has withdrawn their application and turned site over to the Kitasoo ie Kid Bay (6406984). Kid Bay is now recorded as a new fish farm site.. The client Is now consider using the site for as a smolt entry .	Conville Point (1403859)
Marine Harvest Canada/Nutreco	Gov't agencies awaiting MP	Proponent has withdrawn their application and turned site over to the Kitasoo ie Goat Cove (6407324). Goat Cove is now recorded as a new fish farm site.	Bear Bay, Read Island (1401611)
Saltstream Engineering	Gov't agencies awaiting MP	Proponent is preparing to submit MP	Doctor Bay (0193432)

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BRITISH COLUMBIA NET CAGE MESH STRENGTH TESTING PROCEDURE

VERSION I
March, 2002

BRITISH COLUMBIA

Ministry of Agriculture,
Food and Fisheries

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1. SCOPE

This procedure specifies the method that must be used in British Columbia for the purpose of determining the tensile (breaking) strength of mesh used for the containment of farmed fish.

This procedure is intended for use with nets common to the BC finfish aquaculture industry. These nets are generally made with knotless nylon mesh with published breaking strengths of between 50 and 400 lbs. This procedure may not be suitable for other types of nets.

2. PRINCIPLE

A mesh is extended until it ruptures under the applied load. The test is performed using a suitable apparatus that records or indicates the load at the point of rupture. The testing machine is operated at a rate of elongation which is both constant and within prescribed limits.

3. APPARATUS

3.1 Testing Machine

The machine used for testing shall meet the following criteria:

a) Machine shall include a digital load cell or dynamometer providing direct measurement (in units of force) of the load applied to the mesh. The load cell or dynamometer shall be accurate to within 2.5 lbs (11 N), or 1.0% of the mesh breaking strength, whichever is greater.

b) The load cell or dynamometer shall have an accurate means of recording the peak load applied prior to failure of the mesh.

c) Machine shall apply load to a single mesh at a constant rate of elongation equal to 10 inches per minute (25 cm per minute), plus or minus 10%.

d) For testing machines which apply force in discrete steps (such as by way of a hydraulic cylinder with a hand pump), the rate of elongation, per (c) above, shall be the average rate of elongation. During each step, the rate of elongation shall be as close as possible to the average rate required, that is the steps must be consistently applied at a given rate. The maximum mesh elongation for each step shall be 0.20 inches (5 mm). Testing machines of this nature shall be designed such that the user can readily apply the load at a rate that will meet these requirements.

e) The machine shall engage a single mesh for testing with steel pins or hooks formed from round material with a diameter of 0.1875 inches (5 mm) The pins or hooks shall be so mounted as to remain in direct line with the applied load in order to provide a true reading on the load cell or dynamometer. The pins or hooks shall be smooth and free of any sharp edges or roughness.

3.2 Calibration and Maintenance

The dynamometer or load cell from each testing machine shall be calibrated annually in accordance with the manufacturer's recommendations. Testing machines shall also be calibrated annually to ensure that the specified elongation rate is maintained. The owner of the machine shall keep calibration certificates on file, with a copy kept with the machine.

The testing machine shall be properly maintained in order to continue to provide accurate results and to meet the requirements above. This will include replacement of the testing hooks as necessary due to wear, corrosion or roughness.

4. TESTING REQUIREMENTS

4.1 A net cage must be tested according to the testing protocol in Section 5 of this document at the following locations:

(a) two locations separated by greater than 10 meters on the underwater portion of the net; and

(b) one location on the jump net.

4.2 For each location tested on a net cage, the reported result must be the average of 5 breaks.

4.3 Test locations shall be representative of the mesh making up the whole net, and shall not be located in a previously repaired area. If a net has large areas of repair or is fabricated from different sources of mesh, the test procedure (Section 5) shall be performed on each different mesh type or age of mesh, and the reported result must be the average of 5 breaks.

4.4 Testing may be done on mesh remaining in the net or on a sample cut from a net. Cut samples shall be large enough to accommodate the required number of breaks within a single sample.

4.5 Testing done on mesh remaining in the net shall be performed by pulling the net slack around the area to be tested, such that no outside forces are acting upon the mesh being tested, and maintaining such slack for the duration of the test.

4.6 Testing may be performed on dry or wet mesh. Temperature shall be within normal ambient temperatures for the B.C. coast. Tests shall not be conducted on frozen mesh.

***NOTE:** 'Mesh size' refers to the distance between the centers of two opposite joints (or knots) in the same mesh when fully stretched; this information should be obtained from the original tagging on the net cage.

5. TEST PROCEDURE

5.1 Testing shall be performed on a single mesh, oriented so that the pillars (bars) of the mesh are engaged over the pins or hooks, not the knots or joints of the mesh.

5.2 Mount the mesh over the pins or hooks, and take up the slack.

5.3 Apply load at a steady rate of elongation, as defined in 3.1, until the mesh breaks. Record the peak load indicated.

5.4 Repeat for a total of five breaks at the location being tested.

5.5 Average the five results to get the recorded breaking strength for that location.

Example: 200 lbs, 210 lbs, 230 lbs, 195 lbs, 185 lbs

Record breaking strength of (200+210+230+195+185)/5 = 204 lbs

5.6 Record breaking strength to the nearest pound force.

6. REPORTING

Test results shall be recorded on a form that also includes information about the net. Information recorded shall include:

a) Owner of net and net identification number.

b) Mesh manufacturer and manufacturer's published mesh-breaking strength.

c) Net fabricator and date of net fabrication.

d) Accumulated in-water service time.

e) Size and gauge of mesh and dimensions of net cage.

f) Date and location of testing, company and name of person doing test.

g) Information on antifoulant treatment of net, if any.

h) Whether net was tested wet or dry.

i) Approximate ambient temperature at test.

j) Breaking strength test results for each prescribed location, and pass/fail grades per requirements of the Aquaculture Regulation, Appendix 2, section 12.

i) General comments and notes on overall condition of net.

j) Signature of tester.

7. ADDITIONAL INFORMATION

For more information or a printed copy of this document, please call the Courtenay office of the Ministry of Agriculture, Food and Fisheries at (250) 897-7540.

An electronic version of this document is available on the Government of British Columbia web site: www.gov.bc.ca/agf

8. EXAMPLE REPORTING FORM

NET CAGE TESTING RECORD

Date of Testing:	Net ID:	Job Order No.:
Owner of Net (Company):	Name of Company performing testing:	
Name of Contact:	Location of Testing:	Name of Tester:

Mesh Manufacturer:	Dimensions: (ft) or (m)? _____x_____x _____deep:
Net Fabricator:	Mesh Size (mid knot to mid knot): (in) (mm)
Date of Net Fabrication: / Accumulated in-water service time:	Gauge: 210/
Mesh Manufacturer Breaking Strength (lbs):	Tested: WET or DRY ?
Required Strength (lbs or kg ?) BELOW WATERLINE: JUMP:	Test temperature (approx.):

Breaking Strength (lbs or Kg ?)

	Dipped?	Test 1	Test 2	Test 3	Test 4	Test 5	Average	Pass/ Fail	Initials of Tester
BELOW WATERLINE 1	Yes ☐ No ☐								
BELOW WATERLINE 2	Yes ☐ No ☐								
JUMPNET	Yes ☐ No ☐								

Details of Complete Visual Inspection:

Repairs Completed:

Comments:

Signature of Tester:

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Important Information (disclaimer and copyright information)

B.C. Reg. 78/2002
O.C. 283/2002

Deposited April 19, 2002

Fisheries Act

AQUACULTURE REGULATION

Contents

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Appendix 1: Schedule of Fees

Appendix 2: Standards of Practice for Marine Finfish Aquaculture Escape Prevention and Response

Interpretation

1 In this regulation:

"Act" means the *Fisheries Act*;

"aquaculture licence" means a licence referred to in section 13 (5) of the Act;

"aquaculture facility" means an establishment where the business of aquaculture is carried on;

"attachment structure" means mollusc shell, rope, netting, tubing or other structures provided as substrate for the attachment of aquatic plants and fish for purposes of aquaculture;

"bag cage" means an enclosure in a marine or lake environment

(a) made of material impermeable to water, and

(b) used to contain fish;

"cage support system" means a floating infrastructure and anchoring system that supports net cages, bag cages and ancillary equipment;

"containment structure" means cage support systems, net cages, bag cages, tanks, troughs, raceways, natural or man made ponds, trays or other structures used to contain aquatic plants or fish for purposes of aquaculture;

"drug" means a drug as defined in the *Pharmacists, Pharmacy Operations and Drug Scheduling Act* or the *Food and Drugs Act* (Canada);

"finfish" means fish of the classes Agnatha, Chondrichthyes or Osteichthyes grown by a holder;

"holder" means the person to whom an aquaculture licence is issued;

"manager" means the manager of aquaculture in the minister's ministry;

"net cage" means net enclosures used to contain fish.

Dealing in fish or aquatic plants

2 (1) A person must not possess, buy, sell, introduce into British Columbia or transplant within British Columbia fish or aquatic plants for the purpose of carrying on the business of aquaculture unless the person is a holder or is acting on behalf of a holder.

(2) Subsection (1) does not prevent a person who has taken the fish or aquatic plants as collateral for a loan from seizing or disposing of the fish or aquatic plants or otherwise realizing on the person's interest in the fish or aquatic plants to satisfy the obligations secured by them.

Release and escape

3 (1) A person must not release aquatic plants or fish, or cause, authorize or allow the release of aquatic plants or fish, to fresh or tidal waters from an aquaculture facility or from a containment structure or an attachment structure in an aquaculture facility unless authorized to do this by an aquaculture licence.

(2) A holder must take reasonable precautions to prevent the escape of aquatic plants and fish from the holder's aquaculture facility and from a containment structure or an attachment structure in the aquaculture facility.

(3) A holder must take all reasonable measures to control, mitigate, remedy and confine the effects of an escape or a suspected escape of aquatic plants or fish from the holder's aquaculture facility.

(4) Reasonable precautions and reasonable measures under subsection (2) and (3) in the case of a marine finfish aquaculture facility must include compliance with the standards of practice in Appendix 2 of this regulation.

Reporting escape

4 (1) The holder, or a person acting on behalf of the holder, who discovers an escape or evidence suggesting an escape of finfish from an attachment structure or a containment structure in the holder's aquaculture facility must report the escape or evidence to the manager

(a) verbally, within 24 hours of the discovery, and

(b) in writing, within one week of the discovery.

(2) A written report under subsection (1) (b) must include:

(a) the date, estimated time and location of the escape or suspected escape,

(b) the species of finfish that escaped or may have escaped,

(c) the estimated number of finfish that escaped or may have escaped,

(d) the cause or suspected cause of the escape or suspected escape,

(e) the calendar year in which the finfish were stocked at the aquaculture facility,

(f) the average weight of the finfish that escaped or may have escaped,

(g) the rearing facility from which the finfish were received by the aquaculture facility, and

(h) a record of each drug administered to the finfish including:

(i) the name of the drug,

(ii) the period of administration, including the dates of commencement and completion of the drug treatment,

(iii) the name of the prescribing veterinarian,

(iv) the prescribed withdrawal period, and

(v) identification of the lots of finfish treated.

(3) A holder who recaptures or attempts to recapture finfish that have escaped from an aquaculture facility must report in writing the results of the recapture or attempt to recapture to the manager within one week of the recapture or attempted recapture.

Inventory records

5 (1) For each finfish aquaculture facility of a holder, the holder must maintain accurate written records of the following for each containment structure in the aquaculture facility:

(a) the transport, transfer and introduction of finfish into or away from the aquaculture facility;

(b) the weekly finfish mortalities, including the causes of the mortalities and the numbers attributable to each cause of mortality;

(c) all finfish sales from the aquaculture facility, including the number and destination of the finfish sold;

(d) the source and number of each group, lot or stock of finfish at the aquaculture facility; and

(e) each escape of finfish from the aquaculture facility.

(2) Holders must maintain a copy of the records required under this section at the finfish aquaculture facility for each lot of finfish until that lot of finfish is harvested or removed from the aquaculture facility.

Inspection and maintenance records

6 (1) For each finfish aquaculture facility of a holder, the holder must maintain accurate written records of the details of all inspections, maintenance and evaluation of all fish handling equipment, cage support systems and containment structures, including net cages and bag cages.

(2) Records of inspection, monitoring, evaluation and maintenance under this section in the case of a marine finfish aquaculture facility must be kept in a manner that complies with the requirements contained in the standards of practice in Appendix 2 of this regulation.

Training

7 (1) Holders must ensure that all finfish aquaculture facility staff are trained to conduct the business of aquaculture in a manner that prevents escapes and, if escapes occur, enables them to detect escapes and respond immediately and appropriately.

(2) In the case of a marine finfish aquaculture facility, training under this section must be conducted in a manner that complies with the requirements contained in the standards of practice in Appendix 2 of this regulation.

Record of drugs

8 (1) A holder must keep a record of a drug administered to the holder's finfish.

(2) For the purposes of this regulation the administration of a drug to a finfish includes the intentional introduction of a drug, or a substance containing a drug, into water in the holder's aquaculture facility.

(3) The record referred to in subsection (1) must include the following information:

(a) the aquaculture licence number and name of the holder;

(b) the location of the aquaculture facility;

(c) the species of finfish cultured and held;

(d) the name of the veterinarian who prescribed any drugs;

(e) a log

(i) naming the drugs,

(ii) specifying how the drugs were administered,

(iii) specifying the treatment schedule including the date treatment commenced,

(iv) specifying the date of the last treatment, and

(v) specifying the name and including the signature of the person responsible for administering each treatment.

(4) If a person delivers finfish from an aquaculture facility to a processing plant or to a fish buying station, the person must provide, at the time of delivery, a statement to the fish processing plant licensee or the fish buying station licensee, as the case may be, and the holder must retain a copy of this statement for one year.

(5) If a person delivers finfish from a fish buying station to a fish processing plant the person must provide, at the time of the delivery, the original or a copy of the statement referred to in subsection (4) to the fish processing plant licensee.

(6) A fish processing plant licensee who has received a statement under subsection (4) or (5) must retain a copy of the statement for one year.

(7) The statement referred to in subsection (4) must be signed by the person responsible for administering the treatment and by the holder or the holder's agent and must include the following information:

(a) the aquaculture licence number;

(b) the species of finfish;

(c) the date of harvest;

(d) the name of the fish processing plant to which the finfish are delivered;

(e) the quantity of finfish harvested;

(f) a lot number that identifies the shipment of finfish;

(g) the date of the most recent treatment, if any, with a drug or the final day of the withdrawal period for an administered drug, whichever is latest, including:

(i) the name of the drug,

(ii) the treatment schedule,

(iii) the dates treatment commenced and finished,

(iv) the prescribed withdrawal period,

(v) the name of the veterinarian, if any, who prescribed the drug, and

(vi) the name of the person responsible for administering the treatment.

Drug free period

9 A holder must not harvest finfish after administering a drug to the finfish unless:

(a) the *Food and Drugs Act* (Canada) or regulations made under that Act provide standards governing the use of the drug and the holder has complied with those standards, or

(b) the drug is prescribed by a veterinarian, the veterinarian has prescribed a mandatory period of time that must pass between the administration of the drug and the harvest of finfish and the holder has complied with all the veterinarian's instructions.

Prohibition against processing

10 (1) A person must not process finfish for sale in British Columbia except at an establishment that has a valid certificate of registration issued by the Department of Fisheries and Oceans (Canada).

(2) Subsection (1) does not apply to the packaging of finfish by a retailer for sale by the retailer.

(3) Subsection (1) does not apply if a person has the written consent of the minister to process finfish at an establishment with a valid processing licence.

Transportation

11 (1) A person who transports aquatic plants or fish on, over or through fresh or tidal waters must take reasonable precautions to prevent the escape of the plants or fish.

(2) A person who transports finfish must take all reasonable measures to control, mitigate, remedy or confine the effects of an escape of finfish.

Inspectors

12 (1) The minister may appoint a person as an aquaculture inspector to investigate matters related to

(a) the conduct of the business of aquaculture, and

(b) compliance with the Act, this regulation and an aquaculture licence and its conditions.

(2) An aquaculture inspector may enter an aquaculture facility during normal business hours to investigate the matters referred to in subsection (1) and a person must not obstruct the inspector in the course of the inspector's duties.

(3) At the request of an aquaculture inspector, an inspector of fisheries or a conservation officer, a holder or a person acting on a holder's behalf must produce for inspection any record or best management practice plan that is required to be kept under this regulation or as a term of an aquaculture licence, and

(a) a holder or person acting on behalf of a holder must produce for inspection any record or best management practice plan required to be kept under this regulation or a term of an aquaculture licence within 48 hours of a request by an aquaculture inspector, an inspector of fisheries or a conservation officer, and

(b) despite paragraph (a), a holder or a person acting on behalf of a holder must immediately produce for inspection any records or best management practice plan required to be kept at a finfish aquaculture facility by this regulation on request of an aquaculture inspector, an inspector of fisheries or a conservation officer who is present at the aquaculture facility.

(4) In the case of a marine finfish aquaculture facility, records or best management practice plans referred to in this section must include the records or best management practice plans required to be kept under Appendix 2 of this regulation.

(5) To establish that a net cage's mesh meets the minimum breaking strengths established in section 14 of Appendix 2, an aquaculture inspector, an inspector of fisheries or a conservation officer may apply one of the following procedures:

(a) review of the record of the most recent complete out-of-water servicing and inspection completed in accordance with section 18 of Appendix 2;

(b) require the holder to conduct an on-site test of the net in accordance with the protocol in section 15 of Appendix 2 while the net cage remains in the water at the marine finfish aquaculture facility;

(c) require the holder to remove the net cage from the water for a complete out-of-water servicing and inspection completed in accordance with section 18 of Appendix 2 within a timeframe established by the aquaculture inspector, the inspector of fisheries or the conservation officer.

Fees

13 A person applying for a new aquaculture licence, a renewal of an aquaculture licence or an amendment of an aquaculture licence must pay the fee for this set out in Appendix 1.

Appendix 1

1 In this Appendix:

"primary aquaculture product" means an aquatic plant or fish that is a product of aquaculture but does not include a processed or manufactured product;

"production value" means the dollar value of sales of a primary aquaculture product in the previous licence year, but, if the terms and conditions of the aquaculture licence for the previous licence year contain a maximum volume of production equivalent to a dollar value, it means that dollar value for that maximum volume of production.

2 The following schedule of fees applies for the purposes of section 13 of this regulation.

Schedule of Fees

(a) Application for initial licence..... $25

(b) Licence amendment..... $50

(c) Licence and licence renewal for

(i) aquaculture facility on private land, production value at least $7 500..... $100

(ii) aquaculture facility on private land, production value less than $7 500..... $50

(iii) aquaculture facility on Crown land, production value at least $7 500

(A) aquatic plants and fish other than finfish..... $50

(B) finfish..... $200

(iv) aquaculture facility on Crown land, production value less than $7 500

(A) aquatic plants and fish other than finfish..... $50

(B) finfish..... $100

Appendix 2

Standards of Practice for Marine Finfish Aquaculture Escape Prevention and Response

1 In this Appendix, **"spotter"** means a person trained and employed

(a) to watch for activity that indicates an increased risk of finfish escaping,

(b) to signal in a clear and predetermined manner for the activity to stop, and

(c) to take appropriate measures to stop the activity.

Part I — Equipment Design, Use and Maintenance

A — General Design and Maintenance

2 All equipment, materials and structures employed at a marine finfish aquaculture facility must be designed, constructed, installed, inspected and maintained in a manner that prevents escapes, including escapes caused by damage, holes or tears to net cages or containment structures through entanglements with other equipment.

3 Holders must monitor, evaluate and maintain containment structures, including cage support systems and net cages, in order to prevent escapes and to detect and respond to any escapes in a timely manner.

B — Containment Structures and Cage Support Systems

4 The requirements for containment structures are as follows:

(a) holders must ensure that equipment used at their marine finfish aquaculture facility is designed and constructed to meet generally accepted standards prevalent in the aquaculture industry;

(b) holders must evaluate new or experimental containment structure system designs through:

(i) field trials,

(ii) consultation with other aquaculture producers who have used the design,

(iii) comprehensive analysis of the manufacturer's performance trials, or

(iv) review by a professional engineer,

to ensure compatibility with conditions at the proposed location of the marine finfish aquaculture facility and with containment requirements;

(c) holders must ensure that containment structures are installed by a person who knows the risks of finfish escapement from the containment structures and the measures needed to minimize these risks;

(d) containment structures must be repaired or replaced with materials that meet or exceed the specifications approved in the holder's aquaculture licence.

5 The requirements for cage support systems are as follows:

(a) all cage support system weights and other equipment must be designed, constructed and installed with the aim of preventing entanglement and chafing with containment nets, predator nets and shark guard nets;

(b) all cage support system weights, anchoring equipment, and other equipment that has the potential to come into physical contact with the net cage must be maintained to prevent catching or abrading nets;

(c) daily above-water visual inspections of active cage support systems including, anchoring-line buoy orientation and the general integrity of the anchoring system must be conducted at all marine finfish aquaculture facilities;

(d) any irregularity noted in paragraph (c) that increases the risk of escape must be corrected or repaired immediately;

(e) a record of the daily visual inspection and any repairs under this section must be made and a copy of the record must be retained at the marine finfish aquaculture facility for one year.

6 The requirements for anchoring equipment are as follows:

(a) anchoring equipment design must be compatible with the containment structure equipment and biophysical conditions of the location;

(b) anchoring equipment must be repaired or replaced with materials that meet or exceed specifications approved in the holder's aquaculture licence.

C — Net Cages

I — Design, Installation and Maintenance

7 A net cage that does not have a permanently attached mesh top must be attached by the water line rope of the net cage to the cage support system as a primary point of attachment and any attachment of net cages to the cage support system railing must be only for support of the jump net.

8 Jump nets extending at least one metre above the surface of the water must be installed at the top of any net cage that does not have a permanently attached mesh top or similar barrier.

9 Sufficient weight or pressure must be used to produce tension on net cage panels with the aim of

maintaining a taut net.

10 Net cages must be weighted at a sufficient number of points to ensure the tension or weight is distributed evenly.

11 Netting mesh size must be small enough to contain the smallest fish to be placed in the net cage.

12 Net cages must be stored in a manner that minimizes deterioration of the net material.

13 Holders must ensure that all tears found while handling or inspecting net cages in use or intended for use at any time are repaired immediately.

II — Net Cage Mesh Strength

14 According to the dimension classification identified in Table 1, the mesh of any part of a net cage, including any repairs, must meet the minimum breaking strength standards established in Tables 2 through 6.

Table 1: Net Cage Dimension Classification

Perimeter	Up to 50 m (164 ft.)	> 50 m to 60 m (197 ft.)	> 60 m to 70 m (230 ft.)	> 70 m to 80 m (262 ft.)	> 80 m to 90 m (295 ft.)	> 90 m to 110 m (361 ft.)
Depth						
Up to 5 m (16 ft.)	A	A	B	C	D	D
>5 m to 10 m (33 ft.)	A	A	B	C	D	D
>10 m to 15 m (49 ft.)	A	B	B	C	D	D
>15 m to 20 m (66 ft.)	B	B	C	D	D	D
>20 m to 30 m (98 ft.)	D	D	D	D	D	E
>30 m	E	E	E	E	E	E

A to E establishes net cage dimension classification. Depth is from waterline rope to net cage bottom. Perimeter refers to the line bounding the top of the net cage.

Table 2: Dimension Classification A

Mesh Size	Minimum Required Mesh Breaking Strength (below surface of water)	Minimum Required Mesh Breaking Strength (jump netting, above surface of water)
< 22 mm (7/8")	20 kg (44 lbs)	18 kg (41 lbs)
> 22 mm (7/8") to < 38 mm (1-1/2")	26 kg (58 lbs)	24 kg (52 lbs)
38 mm (1-1/2")	31 kg (68 lbs)	28 kg (62 lbs)

> 38 mm (1-1/2")	41 kg (90 lbs)	38 kg (83 lbs)

Table 3: Dimension Classification B

Mesh Size	Minimum Required Mesh Breaking Strength (below surface of water)	Minimum Required Mesh Breaking Strength (jump netting, above surface of water)
< 22 mm (7/8")	25 kg (56 lbs)	24 kg (52 lbs)
> 22 mm (7/8") to < 38 mm (1-1/2")	31 kg (68 lbs)	28 kg (62 lbs)
38 mm (1-1/2")	41 kg (90 lbs)	38 kg (83 lbs)
> 38 mm (1-1/2")	46 kg (102 lbs)	43 kg (94 lbs)

Table 4: Dimension Classification C

Mesh Size	Minimum Required Mesh Breaking Strength (below surface of water)	Minimum Required Mesh Breaking Strength (jump netting, above surface of water)
< 38 mm (1-1/2")	36 kg (79 lbs)	33 kg (73 lbs)
38 mm (1-1/2")	46 kg (102 lbs)	43 kg (94 lbs)
> 38 mm (1-1/2")	51 kg (113 lbs)	47 kg (104 lbs)

Table 5: Dimension Classification D

Mesh Size	Minimum Required Mesh Breaking Strength (below surface of water)	Minimum Required Mesh Breaking Strength (jump netting, above surface of water)
< 38 mm (1-1/2")	41 kg (90 lbs)	38 kg (83 lbs)
38 mm (1-1/2")	51 kg (113 lbs)	47 kg (104 lbs)
> 38 mm (1-1/2")	62 kg (136 lbs)	57 kg (125 lbs)

Table 6: Dimension Class E

Mesh Size	Minimum Required Mesh Breaking Strength (below surface of water)	Minimum Required Mesh Breaking Strength (jump netting, above surface of water)
< 38 mm (1-1/2")	46 kg (102 lbs)	43 kg (94 lbs)
38 mm (1-1/2")	62 kg (136 lbs)	57 kg (125 lbs)
> 38 mm (1-	77 kg (169 lbs)	71 kg (156 lbs)

1/2")		

15 Tests to determine the net cage mesh breaking strengths of a net cage's mesh as established in section 14 of this Appendix must be conducted in accordance with the protocol set out in the British Columbia Net Cage Mesh Strength Testing Procedure, Version 1, a copy of which may be obtained from the manager or an aquaculture inspector.

16 At the request of an aquaculture inspector, an inspector of fisheries or a conservation officer, holders must demonstrate that net cage mesh meets minimum breaking strengths established in section 14 of this Appendix, within a period of time determined by the inspector or conservation officer.

17 Net cages with mesh that does not pass the breaking strength test requirements established in section 14 of this Appendix must be repaired or retired as soon as possible.

III — Inspections and Record Keeping

18 The requirements for complete out-of-water servicing and inspection of net cages are as follows:

(a) servicing and inspections must be carried out by a person who knows the risks of finfish escapement from the net cages and the measures needed to minimize these risks;

(b) a complete visual inspection of the entire net cage must be completed for signs of abrasions, tears or holes;

(c) any damage to the net cage must be repaired as needed;

(d) the net cage mesh must be tested in accordance with the protocol in section 15 of this Appendix;

(e) a record of testing must be completed in accordance with the protocol in section 15 of this Appendix;

(f) the record of testing must be signed by the person who carried out the inspection.

19 (1) In this section, **"comparable method"** means a method of inspection designated in writing by the manager to be equivalent to inspection by divers for purposes of this section.

(2) Holders must ensure that complete inspection and repair of active net cages and any similar structure that contains fish at their marine finfish aquaculture facilities takes place as follows:

(a) an underwater inspection, by divers or other comparable method must be conducted on any net cages or any similar structure used to contain fish prior to the initial introduction of a new group of fish;

(b) active net cages and similar structures used to contain fish must be inspected every 60 days by divers or another comparable method;

(c) despite paragraph (b), active net cages and any similar structure used to contain fish must be inspected as soon as is practicable by divers or another comparable method after any operational activity or event that increases risk of net failure, including extreme environmental conditions, net cage changes, fish delivery, recurring predator attacks, vandalism to net cages

or equipment or towing of active containment structures;

(d) despite paragraph (b), active net cages and any similar structure used to contain fish must be inspected by divers or another comparable method as soon as is practicable after any event that occurs during routine harvesting, grading or any other routine activity which leads a holder or person acting on their behalf to suspect there is a material increase in the risk of net failure.

20 Each net cage must be marked with an inventory control number that is permanently marked on a permanent tag attached at the top of the net cage within one metre of a corner down line or a main down line of a circular net cage.

21 At the marine finfish aquaculture facility where the net cage is deployed, holders must have a written maintenance record for each net cage that includes

(a) the inventory control number referred to in section 20 of this Appendix,

(b) the dimensions,

(c) the mesh size,

(d) a record of the most recent complete out-of-water servicing and inspection under section 18 of this Appendix,

(e) the accumulated time-in-water since the most recent complete out-of-water servicing and inspection under section 18 of this Appendix,

(f) a description and the dates of each inspection under section 19 of this Appendix since most recent complete out-of water servicing and inspection under section 18 of this Appendix, and

(g) a description and the dates of all repairs, including reasons for repairs, made to the net cage since the most recent complete out-of-water servicing and inspection under section 18 of this Appendix.

22 Records required to be kept under section 19 and 21 of this Appendix that were recorded prior to the last out-of-water servicing and inspection under section 18 of this Appendix must be retained for six months after that out-of-water servicing and inspection.

23 Holders must have written records for each net cage that includes

(a) the inventory control number in section 20 of this Appendix,

(b) the manufacturer's name,

(c) the year produced,

(d) the dates and records of all complete out-of-water servicings and inspections since October 31, 2000, under section 18 of this Appendix, and

(e) if applicable, the date of retirement.

24 Records for each net cage under section 23 of this Appendix must be retained for 1 year

following retirement of the net cage.

Part II — Operations

A — Boat Operations

25 Holders must ensure that all boats in use at their marine finfish aquaculture facilities are operated so as to prevent damage to containment structures and anchoring systems.

26 Holders must designate a docking site for boats not involved in the cultivation of fish.

27 Holders must ensure that signs are posted on the containment system to direct boats not involved in the cultivation of fish to designated docking sites.

28 Designated boat docking sites must be designed and located to prevent propeller damage to net cages.

29 Large vessels must not be moored to cage support system rails or stanchions.

B — Key Operational Activities

30 Equipment and practices related to boat operations, fish feeding, fish handling, mortality recovery, smolt delivery, grading, harvesting, towing of active net pens and other activities must be designed and conducted in a manner that prevents the escape of fish.

31 Spotters must be used to visually monitor and prevent damage to net cages, ropes and cage support systems during all fish handling activities, including when a large vessel is operating in the vicinity of active net cages.

32 Catch nets must be used to prevent escapes due to human error, equipment failure, or fish jumping out of the equipment while holders are transporting, harvesting, grading, sampling and moving live finfish outside of net cages.

33 If a pattern of predator attacks is established and resulting mortalities are experienced at a marine finfish aquaculture facility, holders must initiate measures to prevent containment structure damage and collateral stock escape.

C — Best Management Practices Plan

34 (1) Holders must develop and follow a best management practices plan for the operation and maintenance of their marine finfish aquaculture facilities, within 180 days of the proclamation of this regulation, which is consistent with the Standards of Practice in Appendix 2 of this regulation and with the objective of preventing escapes of finfish to the environment as a result of the following activities:

(a) finfish delivery, handling, grading and harvesting;

(b) net cage and bag cage changing;

(c) boat operations and maintenance;

(d) towing of active containment structures at, to or from the marine finfish aquaculture

facility;

(e) management of predation of farm stock;

(f) recovery of mortalities.

(2) The best management practices plan must include

(a) a description of specific management practices and standard operating procedures used to achieve the above objectives,

(b) a statement that the best management practices plan has been reviewed and endorsed by the holder, and

(c) a statement that individuals responsible for implementation of the plan understand and have received training in the plan.

(3) Holders must:

(a) maintain a copy of the best management practices plan at the marine finfish aquaculture facility and make the plan available upon the request of the manager of aquaculture, an aquaculture inspector, an inspector of fisheries or a conservation officer,

(b) amend the best management practices plan in a timely fashion whenever there is a change in the operation of the marine finfish aquaculture facility that materially increases the risk of escape of finfish to the environment,

(c) review any changes in the operation of the marine finfish aquaculture facility and ensure that changes are consistent with best management practices plan objectives, and

(d) if the manager provides a written opinion that a best management practices plan is ineffective in achieving the objectives in subsection (1), revise the best management practices plan and incorporate those revisions as needed in a timely fashion, to ensure the objectives are met.

Part III — Escape Response Plans

35 Every holder must have a written escape response plan.

36 Holders must ensure that their escape response plans are posted in visible locations at their marine finfish aquaculture facilities and that the locations and contents of the posted plans are made known to all staff.

37 Holders' escape response plans must include step-by-step procedures for preventing further escapes and for reporting escapes.

38 After an escape or suspected escape, holders must ensure that immediate corrective action is taken to prevent further escapes and the escape response plan is fully executed.

39 On the escape of finfish from an aquaculture facility, the holder must take all reasonable measures consistent with federal, British Columbia and local government enactments that

(a) will result in the recapture of a significant portion of the lost stock, and

(b) will not detrimentally impact on wild stocks.

40 Holders must ensure that their escape response plans include arrangements in place with federal, British Columbia and local government authorities to obtain without delay the approvals necessary for the purposes of section 39 of this Appendix.

Note: this regulation replaces B.C. Reg. 364/89

[Provisions of the *Fisheries Act*, R.S.B.C. 1996, c. 149, relevant to the enactment of this regulation: section 26]

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BRITISH COLUMBIA

MINISTRY OF AGRICULTURE, FOOD AND FISHERIES
FINFISH AQUACULTURE SITE INSPECTION CHECKLIST

1. OPERATION DESCRIPTION

Incident Number: _____

Company Name: _____ Location: _____

Site Name: _____ Aquaculture Licence Number: _____

Inspection Date and Time: _____

Person(s) Interviewed: _____

Inspection Completed by: _____

General Comments: _____

2. TERMS AND CONDITIONS

MANAGEMENT PLAN		OBSERVED ON SITE		
Species	**Biomass**	**Species**	**Piece Count**	**Biomass**
Total				

Comments: _____

Containment Structures

MANAGEMENT PLAN			OBSERVED ON SITE			
Structure	**Size**	**Total Number**	**Structure**	**Size**	**Total Number**	**Number in Use**

Comments: _____

2.2 AQUACULTURE LICENCE

Is the aquaculture licence current? YES ☐ NO ☐

s. 13 of Fisheries Act, s. 2 of Aquaculture Reg.

Checklist Section
Specific Questions & Relevant Section of Aquaculture Regulation
WRITTEN RECORDS

STATUS

3. ESCAPE REPORTS

- During the last 12 months has the farm detected any escapes or possible escapes? YES ☐ NO ☐

If yes, was the escape reported to the Manager of Aquaculture? **s. 4(1)** YES ☐ NO ☐

- Provide details of most recent escape event (date, species, number, cause, year stocked, average weight, rearing facility, record of each drug): **s. 4(2)** _____

_____

_____

4. INVENTORY RECORDS (CONTAINMENT STRUCTURES)

- Are the required inventory records kept for each containment structure? (fish in, fish out, mortalities, escapes and source of fish) **s. 5(1)** YES ☐ NO ☐
- Are the above inventory records kept on site? **s. 5(2)** YES ☐ NO ☐

5. INSPECTION RECORDS

- Are daily above-water visual inspections of cage support systems done? **s. A5(c)** YES ☐ NO ☐
- Are these daily visual inspections recorded in a written record kept on site? **s. A5(e)** YES ☐ NO ☐
- Are written records maintained of all complete net cage inspections (by divers or other approved methods)? **s.6(1)** YES ☐ NO ☐

  (Hole check dives are required after extreme environmental conditions, net changes, fish delivery, recurring predator attacks, vandalism, towing of active pens and other activities that increase the risk of net failure)**s. A19 (2) (c)**
- Are the required net cage maintenance records kept on site: **s. A21** YES ☐ NO ☐

  (on site net records required are inventory control number dimensions, mesh size, record of last out-of-water service, accumulated time-in-water, description and date of each inspection since the last out-of-water service and the date, description and reason for all repairs made since the last out-of-water servicing or inspection)

6. BEST MANAGEMENT PRACTICES PLAN (BMP)

- Does the Company have a BMP on site? **s. A34(1)** YES ☐ NO ☐
- Is the BMP complete? YES ☐ NO ☐

  (The BMP should include the following activities: fish delivery, handling and harvesting; net cage and bag changing; boat operation; towing of active containment structures; management of predators and recovery of mortalities)

  Comments on BMP _____

_____

- Is further investigation of BMP required to ensure the BMP meets escape prevention objectives? **s. A34(3) (d)** YES ☐ NO ☐
- Does the BMP plan include a statement that the plan has been reviewed and endorsed by the holder? **s. A34(2)(b)** YES ☐ NO ☐

7. ESCAPE RESPONSE

- Does the holder have a written Escape Response Plan posted in a visible location? **s. 35** YES ☐ NO ☐
- Are arrangements in place with federal, provincial and local government authorities to obtain necessary approvals for recapturing escaped fish? **s. A40** YES ☐ NO ☐

8. THERAPEUTANT USE & RECORDS (not required on site)

- Are treatments currently being administered? YES ☐ NO ☐
  - a) If yes, are the treated groups identified? YES ☐ NO ☐
  - b) If no, indicate date of last treatment: _____
- For current or last treatment indicate: **s. 8(7)(g)**
  - a) name of therapeutant: _____ N/A ☐
  - b) name of prescribing veterinarian: _____ N/A ☐
  - c) anticipated withdrawal time: _____ N/A ☐
- Are drug administration records kept. **s. 8(3)** YES ☐ NO ☐

If fish are being harvested has the holder completed a form pursuant to **s. 8(4)** and **8(7)** YES ☐ NO ☐

9. NET CAGE INSPECTIONS

- Is the water line rope the primary point of attachment of the net cage to the cage support system (for cages without a permanently attached mesh top)? **S. A7** YES ☐ NO ☐
- Does the jump net extend at least 1 metre above the water line (for cages without a permanently attached mesh top)? **s. A8** YES ☐ NO ☐
- Is sufficient weight or pressure used to produce tension on net panels in order to maintain a taut net? **s. A9** YES ☐ NO ☐
- Are net cages weighted at a sufficient number of points to ensure the tension or weight is distributed evenly? **s. A10** YES ☐ NO ☐
- Are tears found in nets that are in use or intended for use repaired immediately? **s. A13** YES ☐ NO ☐
- How are complete inspections of active net cages done? (i.e. diver or other method) _____

- Are underwater inspections completed before a new group of fish is introduced? **s. A19 (2)(a)** YES ☐ NO ☐
- Are complete inspections done on active net cages at least every 60 days (by divers or an approved comparable method)? **s. A19(2)(b)** YES ☐ NO ☐
- Are all containment structures inspected after events that could increase the risk of escape? **s. A19(2)(c)** YES ☐ NO ☐

  (Activities that increase risk of escape are extreme weather, net changes, fish delivery, recurring predator attacks, vandalism, towing containment structures.)
- Are all net cages permanently marked with an inventory control number? **s. A20** YES ☐ NO ☐

10. BOAT DOCKING

- Is there a designated docking site for boats not involved in fish cultivation? **s. A26** YES ☐ NO ☐
- Are signs posted on the containment system to direct boats to this site? **s. A27** YES ☐ NO ☐
- Are these sites designed and located to prevent propeller damage to net cages? **s. A28** YES ☐ NO ☐
- Are any large vessels moored to cage support system rails or stanchions? **s. A29** YES ☐ NO ☐

11. FISH HANDLING

If fish handling is occurring, is the company using the following:

a) Spotters during fish handling activities or when a large vessel is operating nearby? **s. A31** YES ☐ NO ☐

b) Catch nets when transporting, harvesting, grading, sampling and moving live fish outside of net cages? **s. A32** YES ☐ NO ☐

12. PREDATOR CONTROL

If a pattern of predator attack has been established, has the operator of the site implemented measures to prevent loss of stock and containment structure damage? **s. A33** YES ☐ NO ☐

13. BIOSECURITY PROCEDURES (for information only)

- Are there multiple year classes on site? YES ☐ NO ☐

If yes, are classes separated? YES ☐ NO ☐

ADDITIONAL COMMENTS/OBSERVATIONS _____

_____

_____

_____

_____

BRITISH COLUMBIA

MINISTRY OF WATER, LAND AND AIR PROTECTION
FINFISH AQUACULTURE SITE INSPECTION CHECKLIST

OPERATION DESCRIPTION

Incident Number: _____

Company Name: _____ Location: _____

Site Name: _____ Aquaculture Licence Number: _____

Inspection Date and Time: _____

Person(s) Interviewed: _____

Inspection Completed by: _____

General Comments: _____

A. REGISTRATION (Section 3)

- Has the site been registered? YES ☐ NO ☐
- If no, has the site been stocked since Dec 11, 2002? YES ☐ NO ☐

B. BEST MANAGEMENT PRACTICES (Section 8)

- Is there a copy of the BMP available at the facility? YES ☐ NO ☐
- Does the BMP identify as an objective compliance with requirements in Sections 5 and 6, and the standards in Section 4? (Standards for soft bottoms) YES ☐ NO ☐
- Does the BMP document show plans for continual reduction in discharges or reduction in number or quantity of potential sources of discharges? YES ☐ NO ☐
- Has the BMP been reviewed by the staff at the facility? YES ☐ NO ☐
- Does the BMP included a fish kill contingency plan? YES ☐ NO ☐
  - Does the plan identify normal mort recovery thresholds? YES ☐ NO ☐
  - Does the plan provide contact phone numbers? YES ☐ NO ☐
  - Does the plan consider logistics up to total loss of fish? YES ☐ NO ☐
- Does the BMP provide information to meet the following objectives:
  - Compliance with monitoring and reporting? YES ☐ NO ☐
  - Continual reduction of number and quantity of wastes? YES ☐ NO ☐
  - Continual improvement in feed conversion ratio? YES ☐ NO ☐
  - Prevention of spillage of feed? YES ☐ NO ☐
  - Prevention of attraction/access of wildlife to feed? YES ☐ NO ☐
  - Prevention of access by wildlife to containment structures? YES ☐ NO ☐
- Does the BMP contain a list of potentially harmful materials? YES ☐ NO ☐

BLOODWATER DISPOSAL

- Are fish live hauled to a processing plant? YES ☐ NO ☐

If yes, list species; _____

If no, is blood water disposed at the processing plant? YES ☐ NO ☐

Waste Management Act, s. 3 (2)

If no, please explain treatment prior to discharge, and volume and location of discharge: _____

_____

NET TREATMENT, CLEANING AND WASTE DISPOSAL

- Are treated nets utilized at the farm? YES ☐ NO ☐
- Are nets cleaned at an upland site? YES ☐ NO ☐

Provide company, location and frequency. _____

_____

DISINFECTANT USE AND DISPOSAL

- Are disinfectants used on site? YES ☐ NO ☐
  - a) If yes, list types and purposes of use. _____
  - b) How and where are disinfectants stored during use? _____

_____

- How are used disinfectants disposed?
- Are disinfectants treated prior to disposal? YES ☐ NO ☐

If yes, explain. _____

_____

MORT STORAGE AND DISPOSAL

- How are morts stored on site prior to disposal? _____
- What is the frequency of removal? _____
- Was any mort spillage observed? YES ☐ NO ☐

If yes, explain location and volume. _____

- Are morts disposed on site? YES ☐ NO ☐

If yes, explain method and authority. _____

If no, provide method and name of disposal company. _____

_____

REFUSE STORAGE AND DISPOSAL

- How is refuse stored on site prior to disposal? _____
- Is refuse disposed on site? YES ☐ NO ☐

If yes, explain location and method. _____

If no, state the disposal location.

FUEL/PRODUCT USE, STORAGE AND CONTAINMENT

- Are diesel tanks protected with adequate containment? YES ☐ NO ☐
  BC Fire Code 4.3.7.3
- Is the generator set protected with adequate containment? YES ☐ NO ☐
- Are fuels/products (therapeutants, anesthetics) securely stored and protected from environment? YES ☐ NO ☐

If no, explain insecure storage. _____

_____

C. SEWAGE TREATMENT AND DISPOSAL (Section 7)

- Is there a washroom facility within the fish farm structure? YES ☐ NO ☐
- Is sewage treated via septic tank with 48 hour retention or another authorized method? YES ☐ NO ☐

If no, explain treatment. _____

- Is sewage discharged via a 15 metre pipe below water? YES ☐ NO ☐

If no, explain discharge. _____

- Are sewage inspection/maintenance/construction records maintained? YES ☐ NO ☐

D. ENVIRONMENTAL MANAGEMENT

- Is adequate spill equipment on site? YES ☐ NO ☐
- Is a spill contingency plan available on site? YES ☐ NO ☐
- Is the Spill Reporting Number (1-800-663-3456) posted on site? YES ☐ NO ☐
- Are methods utilized to minimize overfeeding? YES ☐ NO ☐

If yes, explain methods. _____

_____

E. WATER USE AND LICENCING

- What is the source of fresh water? _____
- What purpose does this farm use water? _____
- If lake or stream water is utilized, is there a water licence? YES ☐ NO ☐
  Water Act, s. 41 (1)(p)

If yes, provide licence number or date of application and file number. _____

_____

F. WILDLIFE PREDATOR TRAPPING

- Have wildlife (otters, mink) been trapped over the last year? YES ☐ NO ☐
  Wildlife Act, s. 11(8)
  a) If yes, name the trapper and licence number. _____
  b) List the type and number of species trapped. _____
  c) Are the species live trapped? YES ☐ NO ☐

G. WILDLIFE HUNTING

- Are firearms stored on site for purpose of personal use/hunting? YES ☐ NO ☐
  Wildlife Act, s. 11(1)(a)(i)

If yes, list responsible person and provincial hunting licence number. _____

_____

ADDITIONAL COMMENTS/OBSERVATIONS _____

_____

_____

_____

_____

_____

_____

BRITISH COLUMBIA

SITE INSPECTION COMPLIANCE REPORT – MAFF Regulatory Issues

Report Section	Compliant*	Report Section	Compliant*
1. Operation Description	n/a	8. Therapeutant Use & Records	Yes ☐ No ☐
2. Terms and Conditions	Yes ☐ No ☐	9. Net Cage Inspections	Yes ☐ No ☐
3. Escape Reports	Yes ☐ No ☐	10. Boat Docking	Yes ☐ No ☐
4. Inventory Records	Yes ☐ No ☐	11. Fish Handling	Yes ☐ No ☐
5. Inspection Records	Yes ☐ No ☐	12. Predator Control	Yes ☐ No ☐
6. Best Management Practices Plan	Yes ☐ No ☐	13. Biosecurity Procedures	n/a
7. Escape Response	Yes ☐ No ☐		

Company Name _____
Site Name _____
Site Ref. No. _____
Person Interviewed _____
Signature _____
MAFF Inspector _____
Date of Inspection _____

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Act or Regulation	Section of Aquaculture Regulation/Fisheries Act Contravened	Required/Recommended Measures	Comments	Compliance Follow-up Date	Date of Required Response to Ministry
☐ Fisheries Act ☐ Aquaculture Reg. ☐ Aqua. Reg. Appendix ☐ Other					
☐ Fisheries Act ☐ Aquaculture Reg. ☐ Aqua. Reg. Appendix ☐ Other					
☐ Fisheries Act ☐ Aquaculture Reg. ☐ Aqua. Reg. Appendix ☐ Other					
☐ Fisheries Act ☐ Aquaculture Reg. ☐ Aqua. Reg. Appendix ☐ Other					

ADDITIONS AND/OR CHANGES MAY BE MADE TO THIS DOCUMENT BEFORE IT IS FORWARDED TO THE LICENCE HOLDER'S MAIN OFFICE

General comments on overall condition and operations of site: _____

Signature of Inspector: _____
Date of Chief Inspector Review: _____
Date Forwarded to Head Office: _____

BRITISH COLUMBIA

SITE INSPECTION COMPLIANCE REPORT – MAFF Regulatory Issues

Site Ref. No.: _____
Person Interviewed (initial) _____
MAFF Inspector (initial) _____

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Act or Regulation	Section of Aquaculture Regulation/Fisheries Act Contravened	Required/Recommended Measures	Comments	Compliance Follow-up Date	Date of Required Response to Ministry
☐ Fisheries Act ☐ Aquaculture Reg. ☐ Aqua. Reg. Appendix ☐ Other					
☐ Fisheries Act ☐ Aquaculture Reg. ☐ Aqua. Reg. Appendix ☐ Other					
☐ Fisheries Act ☐ Aquaculture Reg. ☐ Aqua. Reg. Appendix ☐ Other					
☐ Fisheries Act ☐ Aquaculture Reg. ☐ Aqua. Reg. Appendix ☐ Other					
☐ Fisheries Act ☐ Aquaculture Reg. ☐ Aqua. Reg. Appendix ☐ Other					
☐ Fisheries Act ☐ Aquaculture Reg. ☐ Aqua. Reg. Appendix ☐ Other					

ADDITIONS AND/OR CHANGES MAY BE MADE TO THIS DOCUMENT BEFORE IT IS FORWARDED TO THE LICENCE HOLDER'S MAIN OFFICE

Signature of Inspector: _____
Date of Chief Inspector Review: _____
Date Forwarded to Head Office: _____

BRITISH COLUMBIA

SITE INSPECTION COMPLIANCE REPORT – WLAP Regulatory Issues

Inspection Section	Compliant*	Inspection Section	Compliant*
A. Registration	Yes ☐ No ☐	f) Minimum 110% containment of fuel	Yes ☐ No ☐
B. Best Management Practices	Yes ☐ No ☐	C. a) Treatment of Sewage	Yes ☐ No ☐
a) Disposal of Blood Water	Yes ☐ No ☐	b) Disposal of Sewage	Yes ☐ No ☐
b) Disposal of Net Cleaning Waste	Yes ☐ No ☐	D. Environmental Management	Yes ☐ No ☐
c) Disposal of Disinfectant Waste	Yes ☐ No ☐	E. Water Licence	Yes ☐ No ☐
d) Disposal of Morts	Yes ☐ No ☐	F. Trapping Licence	Yes ☐ No ☐
e) Disposal of Refuse	Yes ☐ No ☐	G. Hunting Licence	Yes ☐ No ☐

Company Name _____
Site Name _____
Person Interviewed _____

Signature _____
MAFF Inspector _____
Date of Inspection _____

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Inspection Section (above)	Legislation Contravened	Required Corrective Measures	Date Action to be Completed	Date of Required Response to Ministry

Service of this notice does not preclude the ministry from pursuing prosecution and/or administration action for the above-listed non-compliance issues.

Other Non-Compliance observed: _____

Signature of Inspector: _____
Date of Chief Inspector Review: _____
Date Forwarded to Head Office: _____
Date Forwarded to MWLAP: _____

Company	Number of Sites Inspected - MAFF Compliance points	Number of Sites Inspected - WLAP Compliance Points
Connors Bros. Ltd. (Heritage)	11	11
Creative Salmon Company Ltd.	4	4
Ewos Aquaculture Ltd.	7	7
Grieg Seafood BC Ltd.	4	4
Hardy Sea Farms Inc.	7	7
Nutreco Canada Inc.	14	14
Omega Pacific Seafarms Inc.	1	1
Omega Salmon Group Ltd.	9	9
Saltstream Engineering Ltd.	1	1
Sonora Sea Farm Ltd.	1	1
Stolt Sea Farm Inc.	16	16
Totem Oysters Ltd.	1	1
Yellow Island Aquaculture (1994) Ltd.	1	1
Totals:	**77**	**77**

Summary of Record-Keeping Requirements for Marine Commercial Finfish Aquaculture Facilities in British Columbia

This document summarizes select portions of the *Aquaculture Regulation* (78/02) under the provincial *Fisheries Act*. This document is not a legal authority and in no event will the Province be liable or responsible for damages of any kind arising out of the use of this summary. Persons who need to rely on the text of the regulation for legal and other purposes should obtain the official printed version.

Type of Record	Specific Area	Contents of record	Retention Time	Location of record	Availability to an aquaculture inspector	Relevant section of regulation
FISH	Inventory	For each containment structure (net cage, bag type, etc.), licence holders must maintain accurate written records of: • the transport, transfer and introduction of fish into or away from the facility • the weekly fish mortalities, including the causes and the numbers attributable to each cause • all fish sales from the facility, including number and destination of fish sold • the source and number of each group/lot/stock of fish at the facility • each escape of fish from the facility	Unspecified. Holders should maintain records for a reasonable period of time Records should be available at the facility until the lot of finfish is harvested or removed from the facility	At the facility until the lot of finfish is harvested or removed from the facility Unspecified after fish are harvested or removed from the facility	Within 48 hrs upon request; immediately upon request by an inspector who is at the facility	s. 5(1)- 5(2)
	Drugs	Licence holders must keep a record of the following information for a drug administered to the holder's fish: • aquaculture licence number, name of licence holder, location of facility • species of fish cultured/held • name of the veterinarian who prescribed any drugs • a log that: names any drugs, specifies how drugs were administered, specifies the treatment schedule including the date treatment commenced and ended, names and includes the signature of the person responsible for administering each treatment.	Unspecified. Holders should maintain records for a reasonable period of time	Unspecified	Within 48 hrs upon request	s. 8(1)- 8(3)
	Harvests	Provide a statement to a fish processing plant or buying station to which fish are delivered from the facility, at the time of delivery. This statement must include the: • signature of the licence holder (or the licence holder's agent) and signature of the person responsible for administering the drug treatment discussed below. • aquaculture licence number	1yr by holder and 1yr by plant/ station licensee	Unspecified	Within 48 hrs upon request	s. 8(4)- 8(7)

Summary of Record-Keeping Requirements for Marine Commercial Finfish Aquaculture Facilities in British Columbia

FISH	Harvests (continued)	• species of fish • date of harvest • name of processing plant or buying station the fish were delivered to • quantity of fish harvested • a lot number that identifies the shipment of fish • date and record of most recent drug treatment, if any, with a drug or date of the final day of the withdrawal period for an administered drug (whichever is latest). This should include the name of the drug, treatment schedule, the dates treatment commenced and finished, the prescribed withdrawal period, name of veterinarian (if any) who prescribed the drug, and the name and signature of the person responsible for administering the treatment	1yr by holder and 1yr by plant/ station licensee	Unspecified	Within 48 hrs upon request	s. 8(4)- 8(7)
EQUIPMENT	Cage Support System	Record of daily visual inspections and repairs of the cage support system	1 year from date of daily visual inspection	At the facility	Within 48 hrs upon request; immediately upon request by an inspector who is at the facility	s. 6(1) Appendix 2, s.5(e)
EQUIPMENT	Net Cages: *regular maintenance*	Licence holders must have a written maintenance record *for each net cage deployed* which includes: • the inventory control number (see Appendix 2, section 20 for specifications on tagging each net cage) • dimensions and mesh size • record of most recent complete out-of-water servicing and inspection (see Appendix 2, section 18 for complete requirements for this servicing and inspection) ➢ when cage net mesh is tested as part of a complete out-of-water servicing and inspection, the person who carries out this servicing and inspection must complete and sign a net testing record (specific details of this requirement can be found in the "British Columbia Net Cage Mesh Strength Testing Procedure, Version 1") • the accumulated time in water since most recent complete out-of-water servicing and inspection • a description and the dates of each inspection (by divers or other comparable method) since the most recent complete out-of-water servicing and inspection • a description, the dates and reasons for all repairs made since most recent complete out-of-water servicing and inspection	6 months after the most recent complete out-of-water servicing and inspection	At the facility	Within 48 hrs upon request; immediately upon request by an inspector who is at the facility	s. 6(1) Appendix 2, s.18-21 "British Columbia Net Cage Mesh Strength Testing Procedure, Version 1"

Summary of Record-Keeping Requirements for Marine Commercial Finfish Aquaculture Facilities in British Columbia

EQUIPMENT	Net Cages: *life history*	Licence holders must have a written record for each net cage that includes: • the inventory control number (see Appendix 2, section 20 for specifications on tagging each net cage) • manufacturer's name • year produced • dates and records of all complete out-of-water servicing and inspections since October 31, 2000 • date of retirement (if applicable)	1 year following retirement of net	Unspecified	Within 48 hrs upon request	s. 6(1) Appendix 2, s. 23-24
STAFF PRACTICES	Best Management Practices (BMP) Plans	Licence holders must maintain a copy of a BMP plan at the facility; this plan must include: • a description of specific practices and procedures used to achieve the escape prevention objectives in Section 34(1) • a statement that the plan has been reviewed and endorsed by the licence holder • a statement that individuals responsible for implementation of the plan understand and have received training in the plan Note: Other government policies and regulations may require submission of information in a BMP plan format; however the above requirements refer only to BMP plans prescribed under the *Aquaculture Regulation* (78/02)	Always	At the facility	Within 48 hrs upon request; immediately upon request by an inspector who is at the facility	Appendix 2, s. 34
	Escape Response Plans	Licence holders must have a written escape response plan; plans must be posted in visible locations at their aquaculture facilities; contents and locations of plans must be made known to all staff.	Always	At the facility	Within 48 hrs upon request; immediately upon request by an inspector who is at the facility	Appendix 2, s. 35

NOTE:
A licence holder must produce for inspection any record or Best Management Practices plan required to be kept under this regulation within 48 hours of a request by a provincial aquaculture inspector. Records that are required under this regulation to be kept at the facility must be provided immediately upon request by an inspector who is at the facility. An inspector may enter the facility any time during normal business hours (see section 12(3) of the *Aquaculture Regulation* for details).

SUMMARY OF MARINE ESCAPE REPORTS:

The factors contributing to escapes can be roughly divided into six general categories:

1. **System Failure:** failure of containment structures or anchoring systems that result from a technological failure not related to nets, generally of a catastrophic nature. Can most often be attributed to extreme weather or ecological events (i.e. floods). This cause of escape has declined dramatically over the last decade and no major escapes (over 10,000 fish) have resulted from system failure in the last seven years.
2. **Boat Operations:** net tears or infrastructure damage resulting from propeller or whole boat collisions with the net pen system.
3. **Net Failure (predators):** net tears resulting from seal, sea lion or dogfish attacks.
4. **Net Failure (maintenance)**: net tears resulting from poor or inadequate maintenance such as chafing of nets due to contact with abrasive equipment, failure to repair small holes, deterioration o nets with age, failure to remove dead fish or debris, etc.
5. **Net Failure (known or suspected vandalism)**: fish loss resulting from a suspected or known vandalism incident.
6. **Handling:** fish loss that results during fish handling events such as fish transfer, net changes, towing, sorting, grading, harvesting, etc and is not related to failure of the integrity of a net-pen or containment structure. This type of escape can generally be directly attributed to human error.

Table 1: Summary of Causes of Reported Marine Escapes Between 1989 and 2000.

Cause	1989-1992			1993-1996			1997-2000		
	% incident	# incident	% pieces	% incident	# incident	% pieces	% incident	# incident	% pieces
1. System Failure	54.3%	19	70.7%	13.0%	3	20.2%	3.8%	1	3.3%
2. Boat Operations	8.6%	3	2.8%	17.4%	4	10.1%	15.4%	4	15.4%
3. Net Failure (predators)	11.4%	4	1.6%	21.7%	5	25.7%	26.9%	7	8.2%
4. Net Failure (maintenance)	5.7%	2	2.8%	21.7%	5	31.9%	3.8%	1	13.2%
5. Net Failure (known or suspected vandalism)	8.6%	3	19.2%	0.0%	0	0.0%	7.7%	2	32.2%
6. Handling	11.4%	4	2.9%	21.7%	5	7.0%	42.3%	11	27.7%
7. Unknown	0.0%	0.0%	0.0%	4.3%	1	5.1%	0.0%	0.0%	0.0%
Total incidents		**35**			**23**			**26**	
Average Pieces			**215123**			**39561**			**60424**

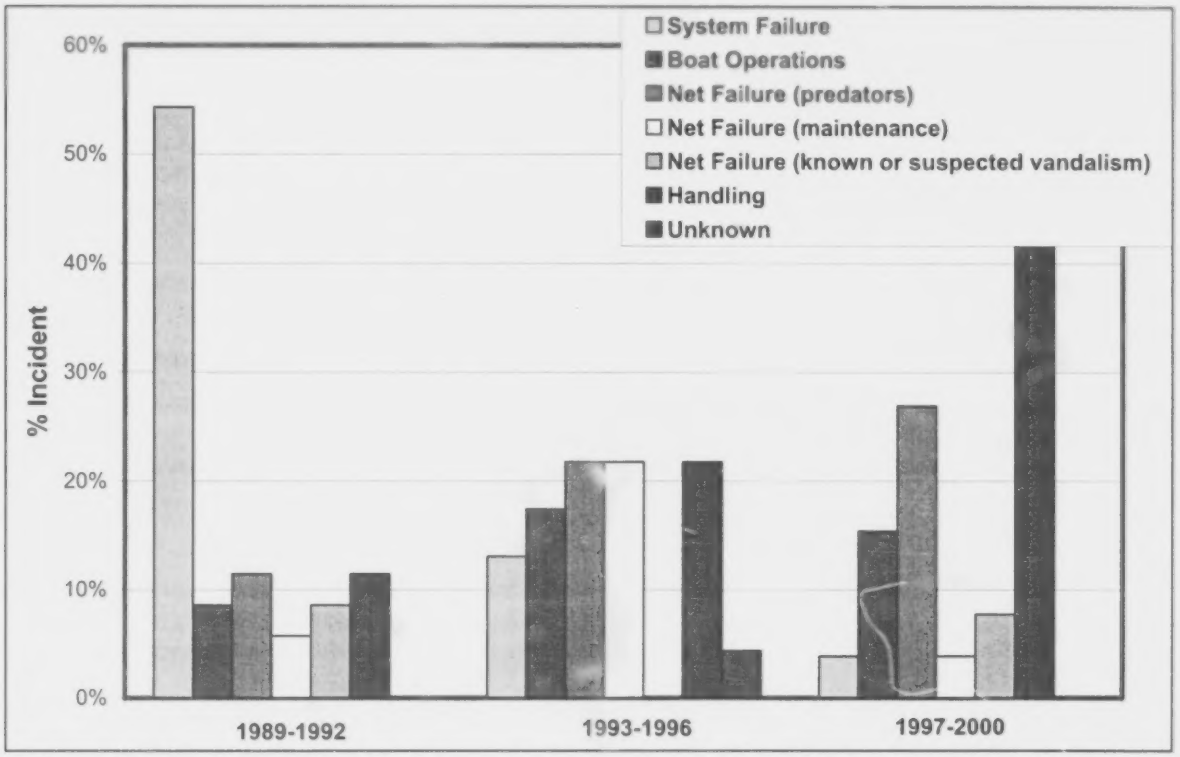
Data compiled from Atlantic Salmon Watch program and escape reports submitted to the Ministry of Agriculture, Food and Fisheries

% incident: percentage of escape incidents over a four year interval

incident: total number of escape incidents over a four year interval

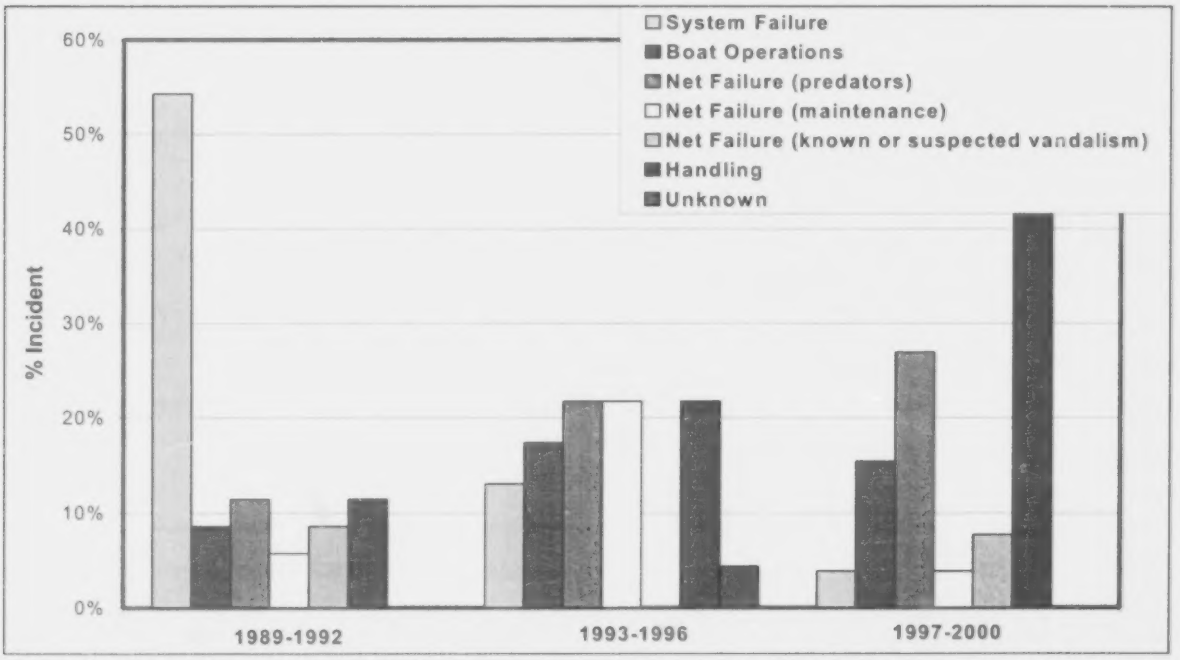
% pieces: percentage of the total number of fish lost over a four year interval

Figure 1: Causes of Marine Farmed Salmon Escapes by Percentage of Reported Fish Lost.



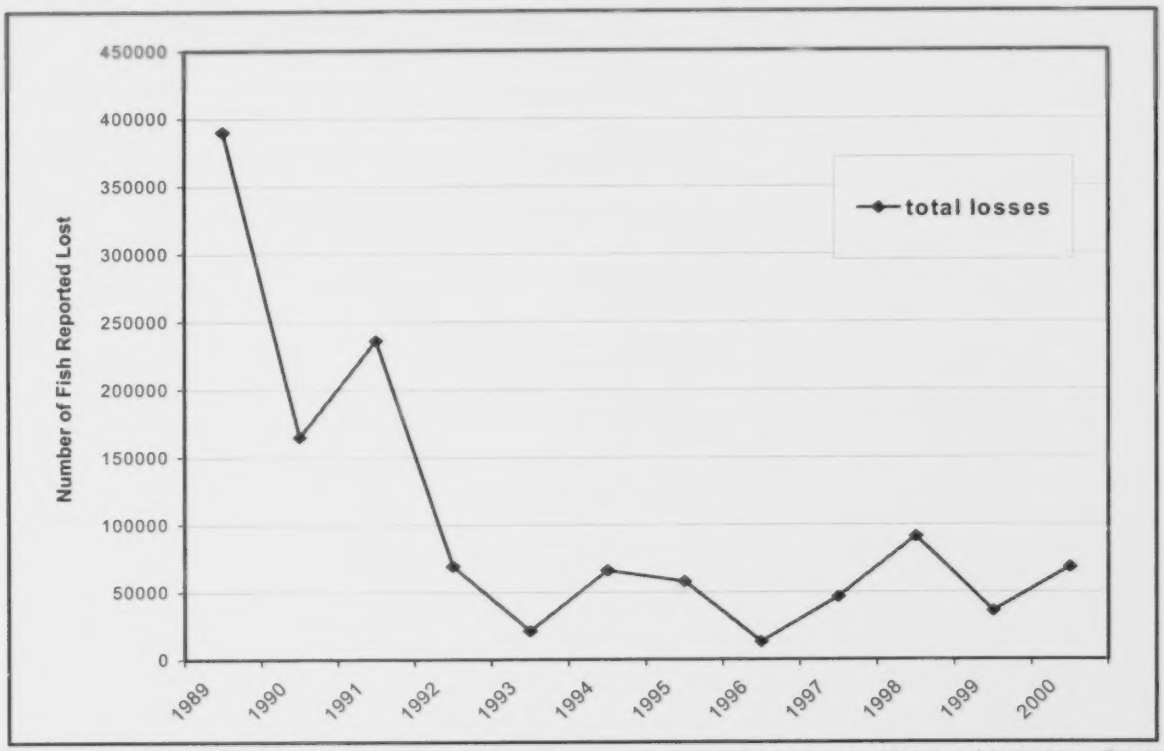
Data compiled from Atlantic Salmon Watch program and escape reports submitted to the Ministry of Agriculture, Food and Fisheries.

Figure 2. Causes of Marine Farmed Salmon Escapes by Percentage of Reported Incidents.



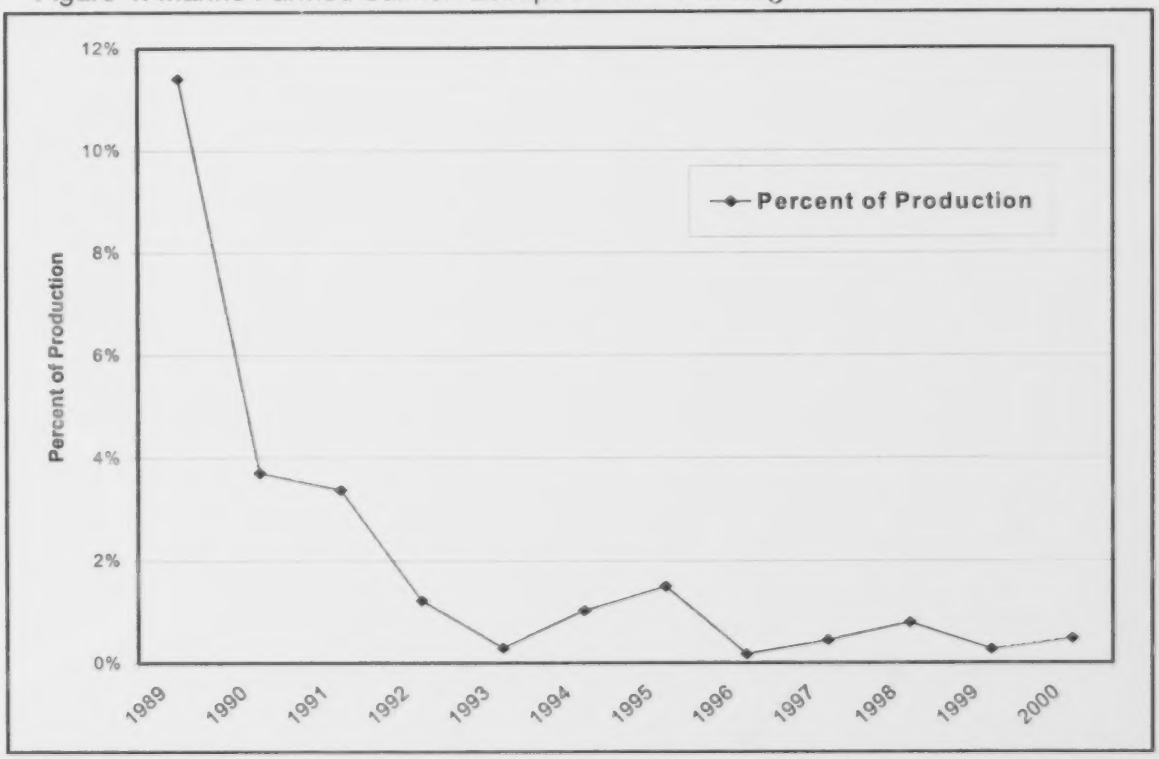
Data compiled from Atlantic Salmon Watch program and escape reports submitted to the Ministry of Agriculture, Food and Fisheries.

Figure 3. Marine Farmed Salmon Losses in British Columbia 1989-2000



Data compiled from Atlantic Salmon Watch program and escape reports submitted to the Ministry of Agriculture, Food and Fisheries.

Figure 4. Marine Farmed Salmon Escapes as a Percentage of Production.



Data compiled from Atlantic Salmon Watch program and escape reports submitted to the Ministry of Agriculture, Food and Fisheries.

Ministry of Agriculture, Food and Fisheries
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*		Report Section	Compliant*	
Terms and Conditions	Yes ☐	No ☒	Therapeutant Use & Records	Yes ☒	No ☐
Escape Reports	Yes ☒	No ☐	Net Cage Inspections	Yes ☐	No ☒
Inventory Records	Yes ☒	No ☐	Boat Docking	Yes ☐	No ☒
Inspection Records	Yes ☐	No ☒	Fish Handling	Yes ☒	No ☐
Best Management Practices Plan	Yes ☐	No ☒	Predator Control	Yes ☒	No ☐
Escape Response	Yes ☐	No ☒			

Connors Bros. Ltd. (Heritage)

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Terms and Conditions – Site configuration	San Mateo Bay (224), Raza Island (304), Cliff Bay (136), Sir Edmund Bay (728), Cecil Island (819), Maude Island (869), Wehlis Bay (1335), Mt Simmonds (1336)
Terms and Conditions – Biomass	San Mateo Bay (224), Sir Edmund Bay (728), Wehlis Bay (1335)
Inspection Records – Net cage maintenance records not kept on site	Brent Island (1401), Cliff Bay (136), Venture Point (306), Cypress Harbour (458), Cecil Island (819), Maude Island (869),
Best Management Practices Plan – BMP does not include a statement the plan has been reviewed by the holder.	Cliff Bay (136), Sir Edmund Bay (728), Cecil Island (819), Maude Island (869)
Escape Response – Escape response plan not post is a visible location	Cliff Bay (136)
Net Cage Inspections – Water line rope not the primary attachment	San Mateo Bay (224)
Net Cage Inspections – All nets are not permanently marked with inventory numbers	Cecil Island (819), Maude Island (869)
Boat Docking – Docking site not marked	San Mateo Bay (224), Raza Island (304)

General comments: _____

Ministry Water, Land and Air Protection
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*	Report Section	Compliant*
Registration	Yes ☐ No ☒	Fuel Storage and Containment	Yes ☐ No ☒
Best Management Practices	Yes ☐ No ☒	Sewage Treatment, Disposal and Record Keeping	Yes ☐ No ☒
Disposal of Blood Water	Yes ☒ No ☐	Environmental Management	Yes ☐ No ☒
Disposal of Net Cleaning Waste	Yes ☐ No ☒	Water Licence	Yes ☐ No ☒
Storage and Disposal of Disinfectant	Yes ☒ No ☐	Wildlife Predation Trapping Licence	Yes ☒ No ☐
Storage and Disposal of Morts	Yes ☒ No ☐	Wildlife Hunting Licence	Yes ☒ No ☐
Storage and Disposal of Refuse	Yes ☒ No ☐		

Connors Bros. Ltd. (Heritage)

Company Name

***IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS**

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Registration – Site not registered	Raza Island (304), Cliff Bay (136)
Best Management Practices – Non-compliance with requirements of sections 5,6, and standards of section 4	Brent Island (1401), Cliff Bay (136), Maude Island (869)
Best Management Practices – Non-compliant with reduction in discharge or reduction in number of quantity of potential discharges	Cliff Bay (136), Venture Point (306), Maude Island (869)
Best Management Practices – No continued improvement in feed conversion ratio for feed fed to finfish	Venture Point (306)
Best Management Practices – No endorsement that the BMP has been reviewed and endorsed by the operation and reviewed by responsible staff	Cliff Bay (136)
Best Management Practices – Finfish Kill Contingency Plan missing required element – Contact Number	Cliff Bay (136)
Best Management Practices – Finfish Kill Contingency Plan missing required element – Fish Kill Threshold	Cliff Bay (136), Venture Point (306), Cypress Harbour (458), Sir Edmund Bay (728), Maude Island (869)
Disposal of Net Cleaning Waste – Non-compliant with disposal of net waste	San Mateo Bay (224)
Fuel Storage and Containment – Diesel tank not protected with 110% containment	San Mateo Bay (224)
Fuel Storage and Containment – Generator not protected with 110% containment	Venture Point (306), Mt Simmonds (1336)
Fuel Storage and Containment – Fuels not securely stored and protected	Raza Island (304), Venture Point (306)
Sewage Treatment, Disposal and Record Keeping – No washroom on site	Mt Simmonds (1336)
Sewage Treatment, Disposal and Record Keeping – Sewage not treated via septic tank or other authorized method	Venture Point (306), Mt Simmonds (1336)
Sewage Treatment, Disposal and Record Keeping – Sewage maintenance records not kept	Cliff Bay (136)
Environmental Management – Spill reporting number not posted	Raza Island (304)
Water Licence – No water licence in place	Brent Island (1401), Venture Point (306)

General comments: **No compliance issues noted for Cecil Island (819) or Wehlis Bay (1335).**

Ministry of Agriculture, Food and Fisheries
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*		Report Section	Compliant*	
Terms and Conditions	Yes ☐	No ☒	Therapeutant Use & Records	Yes ☒	No ☐
Escape Reports	Yes ☒	No ☐	Net Cage Inspections	Yes ☒	No ☐
Inventory Records	Yes ☒	No ☐	Boat Docking	Yes ☒	No ☐
Inspection Records	Yes ☒	No ☐	Fish Handling	Yes ☒	No ☐
Best Management Practices Plan	Yes ☒	No ☐	Predator Control	Yes ☒	No ☐
Escape Response	Yes ☒	No ☐			

Creative Salmon Company Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Terms and Conditions – Site configuration	Baxter (776), Indian Bay (233), Eagle Bay (244)
Terms and Conditions – Biomass	Eagle Bay (244)

General comments: **No compliance issues noted for Dawley Passage (1596).**

Ministry Water, Land and Air Protection
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*		Report Section	Compliant*	
Registration	Yes ☐	No ☒	Fuel Storage and Containment	Yes ☐	No ☒
Best Management Practices	Yes ☒	No ☐	Sewage Treatment, Disposal and Record Keeping	Yes ☒	No ☐
Disposal of Blood Water	Yes ☒	No ☐	Environmental Management	Yes ☒	No ☐
Disposal of Net Cleaning Waste	Yes ☐	No ☒	Water Licence	Yes ☒	No ☐
Storage and Disposal of Disinfectant	Yes ☒	No ☐	Wildlife Predation Trapping Licence	Yes ☒	No ☐
Storage and Disposal of Morts	Yes ☒	No ☐	Wildlife Hunting Licence	Yes ☒	No ☐
Storage and Disposal of Refuse	Yes ☒	No ☐			

Creative Salmon Company Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Registration – Site not registered	Indian Bay (233)
Disposal of Net Cleaning Waste – Non-compliant with disposal of net waste	Eagle Bay (244)
Fuel Storage and Containment – Generator not protected with 110% containment	Baxter (776)

General comments: **No compliance issues noted for Dawley Passage (1596).**

Ministry of Agriculture, Food and Fisheries
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*		Report Section	Compliant*	
Terms and Conditions	Yes ☐	No ☒	Therapeutant Use & Records	Yes ☒	No ☐
Escape Reports	Yes ☒	No ☐	Net Cage Inspections	Yes ☐	No ☒
Inventory Records	Yes ☒	No ☐	Boat Docking	Yes ☒	No ☐
Inspection Records	Yes ☒	No ☐	Fish Handling	Yes ☒	No ☐
Best Management Practices Plan	Yes ☒	No ☐	Predator Control	Yes ☒	No ☐
Escape Response	Yes ☒	No ☐			

Grieg Seafood BC Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Terms and Conditions – Site configuration	Lutes Creek (1078), Hecate Channel (1078), Cliff Cove (404), Steamer Point (1079)
Terms and Conditions – Biomass	Cliff Cove (404)
Net Cage Inspections – Water line rope not the primary attachment	Lutes Creek (1078), Hecate Channel (1078)

General comments:

Ministry Water, Land and Air Protection
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*		Report Section	Compliant*	
Registration	Yes ☒	No ☐	Fuel Storage and Containment	Yes ☐	No ☒
Best Management Practices	Yes ☒	No ☐	Sewage Treatment, Disposal and Record Keeping	Yes ☒	No ☐
Disposal of Blood Water	Yes ☒	No ☐	Environmental Management	Yes ☒	No ☐
Disposal of Net Cleaning Waste	Yes ☒	No ☐	Water Licence	Yes ☒	No ☐
Storage and Disposal of Disinfectant	Yes ☒	No ☐	Wildlife Predation Trapping Licence	Yes ☒	No ☐
Storage and Disposal of Morts	Yes ☒	No ☐	Wildlife Hunting Licence	Yes ☒	No ☐
Storage and Disposal of Refuse	Yes ☒	No ☐			

Grieg Seafood BC Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Fuel Storage and Containment – Diesel tank not protected with 110% containment	Hecate Channel (1078)

General comments: **No compliance issues noted for Cliff Cove (404), Lutes Creek (1078), or Steamer Point (1079).**

Ministry of Agriculture, Food and Fisheries
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*	Report Section	Compliant*
Terms and Conditions	Yes ☒ No ☐	Therapeutant Use & Records	Yes ☒ No ☐
Escape Reports	Yes ☒ No ☐	Net Cage Inspections	Yes ☒ No ☐
Inventory Records	Yes ☒ No ☐	Boat Docking	Yes ☒ No ☐
Inspection Records	Yes ☒ No ☐	Fish Handling	Yes ☒ No ☐
Best Management Practices Plan	Yes ☒ No ☐	Predator Control	Yes ☒ No ☐
Escape Response	Yes ☒ No ☐		

Hardy Sea Farms Inc.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number

General comments: **No compliance issues noted for Power Bay (219), Vantage Point (221), Kunechin (408), Salmon Inlet (412), Site 13 (746), Salten (332), or Jarvis (754).**

Ministry Water, Land and Air Protection
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*	Report Section	Compliant*
Registration	Yes ☒ No ☐	Fuel Storage and Containment	Yes ☒ No ☐
Best Management Practices	Yes ☒ No ☐	Sewage Treatment, Disposal and Record Keeping	Yes ☒ No ☐
Disposal of Blood Water	Yes ☒ No ☐	Environmental Management	Yes ☒ No ☐
Disposal of Net Cleaning Waste	Yes ☒ No ☐	Water Licence	Yes ☒ No ☐
Storage and Disposal of Disinfectant	Yes ☒ No ☐	Wildlife Predation Trapping Licence	Yes ☒ No ☐
Storage and Disposal of Morts	Yes ☒ No ☐	Wildlife Hunting Licence	Yes ☒ No ☐
Storage and Disposal of Refuse	Yes ☒ No ☐		

Hardy Sea Farms Inc.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number

General comments: **No compliance issues noted for Power Bay (219), Vantage Point (221), Kunechin (408), Salmon Inlet (412), Site 13 (746), Salten (332), or Jarvis (754).**

Ministry of Agriculture, Food and Fisheries
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*	Report Section	Compliant*
Terms and Conditions	Yes ☒ No ☐	Therapeutant Use & Records	Yes ☒ No ☐
Escape Reports	Yes ☒ No ☐	Net Cage Inspections	Yes ☒ No ☐
Inventory Records	Yes ☒ No ☐	Boat Docking	Yes ☒ No ☐
Inspection Records	Yes ☒ No ☐	Fish Handling	Yes ☒ No ☐
Best Management Practices Plan	Yes ☒ No ☐	Predator Control	Yes ☒ No ☐
Escape Response	Yes ☒ No ☐		

Saltstream Engineering Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number

General comments: **No compliance issues noted for Doctor Bay (456).**

Ministry Water, Land and Air Protection
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*	Report Section	Compliant*
Registration	Yes ☒ No ☐	Fuel Storage and Containment	Yes ☒ No ☐
Best Management Practices	Yes ☐ No ☒	Sewage Treatment, Disposal and Record Keeping	Yes ☒ No ☐
Disposal of Blood Water	Yes ☒ No ☐	Environmental Management	Yes ☒ No ☐
Disposal of Net Cleaning Waste	Yes ☒ No ☐	Water Licence	Yes ☒ No ☐
Storage and Disposal of Disinfectant	Yes ☒ No ☐	Wildlife Predation Trapping Licence	Yes ☒ No ☐
Storage and Disposal of Morts	Yes ☒ No ☐	Wildlife Hunting Licence	Yes ☒ No ☐
Storage and Disposal of Refuse	Yes ☒ No ☐		

Saltstream Engineering Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Best Management Practices – No BMP – failure to implement BMP	Doctor Bay (456)

Ministry of Agriculture, Food and Fisheries
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*	Report Section	Compliant*
Terms and Conditions	Yes ☒ No ☐	Therapeutant Use & Records	Yes ☒ No ☐
Escape Reports	Yes ☒ No ☐	Net Cage Inspections	Yes ☒ No ☐
Inventory Records	Yes ☒ No ☐	Boat Docking	Yes ☒ No ☐
Inspection Records	Yes ☒ No ☐	Fish Handling	Yes ☒ No ☐
Best Management Practices Plan	Yes ☐ No ☒	Predator Control	Yes ☒ No ☐
Escape Response	Yes ☒ No ☐		

Totem Oysters Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Best Management Practices Plan – The company has not developed and are not following a BMP plan	St. Vincent Bay (247)

General comments: _____

Ministry Water, Land and Air Protection
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*	Report Section	Compliant*
Registration	Yes ☐ No ☒	Fuel Storage and Containment	Yes ☒ No ☐
Best Management Practices	Yes ☐ No ☒	Sewage Treatment, Disposal and Record Keeping	Yes ☒ No ☐
Disposal of Blood Water	Yes ☒ No ☐	Environmental Management	Yes ☐ No ☒
Disposal of Net Cleaning Waste	Yes ☒ No ☐	Water Licence	Yes ☒ No ☐
Storage and Disposal of Disinfectant	Yes ☒ No ☐	Wildlife Predation Trapping Licence	Yes ☒ No ☐
Storage and Disposal of Morts	Yes ☒ No ☐	Wildlife Hunting Licence	Yes ☒ No ☐
Storage and Disposal of Refuse	Yes ☒ No ☐		

Totem Oysters Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Registration – Site not registered	St. Vincent Bay (247)
Best Management Practices – No BMP – failure to implement BMP	St. Vincent Bay (247)
Environmental Management – No spill contingency plan available on site	St. Vincent Bay (247)

Ministry of Agriculture, Food and Fisheries
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*		Report Section	Compliant*	
Terms and Conditions	Yes ☒	No ☐	Therapeutant Use & Records	Yes ☒	No ☐
Escape Reports	Yes ☒	No ☐	Net Cage Inspections	Yes ☒	No ☐
Inventory Records	Yes ☒	No ☐	Boat Docking	Yes ☒	No ☐
Inspection Records	Yes ☒	No ☐	Fish Handling	Yes ☒	No ☐
Best Management Practices Plan	Yes ☐	No ☒	Predator Control	Yes ☒	No ☐
Escape Response	Yes ☒	No ☐			

Omega Pacific Seafarms Inc.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Best Management Practices Plan – The company has not developed and are not following a BMP plan	Jane Bay (270)

General comments:

Ministry Water, Land and Air Protection
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*		Report Section	Compliant*	
Registration	Yes ☐	No ☒	Fuel Storage and Containment	Yes ☐	No ☒
Best Management Practices	Yes ☐	No ☒	Sewage Treatment, Disposal and Record Keeping	Yes ☐	No ☒
Disposal of Blood Water	Yes ☒	No ☐	Environmental Management	Yes ☒	No ☐
Disposal of Net Cleaning Waste	Yes ☒	No ☐	Water Licence	Yes ☐	No ☒
Storage and Disposal of Disinfectant	Yes ☒	No ☐	Wildlife Predation Trapping Licence	Yes ☒	No ☐
Storage and Disposal of Morts	Yes ☒	No ☐	Wildlife Hunting Licence	Yes ☒	No ☐
Storage and Disposal of Refuse	Yes ☒	No ☐			

Omega Pacific Seafarms Inc.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Registration – Site not registered	Jane Bay (270)
Best Management Practices – No BMP – failure to implement BMP	Jane Bay (270)
Fuel Storage and Containment – Diesel tank not protected with 110% containment	Jane Bay (270)
Fuel Storage and Containment – Generator not protected with 110% containment	Jane Bay (270)
Sewage Treatment, Disposal and Record Keeping – Sewage not treated via septic tank or other authorized method	Jane Bay (270)
Water Licence – Water licence not in place	Jane Bay (270)

Ministry of Agriculture, Food and Fisheries
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*		Report Section	Compliant*	
Terms and Conditions	Yes ☒	No ☐	Therapeutant Use & Records	Yes ☒	No ☐
Escape Reports	Yes ☒	No ☐	Net Cage Inspections	Yes ☐	No ☒
Inventory Records	Yes ☐	No ☒	Boat Docking	Yes ☐	No ☒
Inspection Records	Yes ☐	No ☒	Fish Handling	Yes ☒	No ☐
Best Management Practices Plan	Yes ☐	No ☒	Predator Control	Yes ☒	No ☐
Escape Response	Yes ☒	No ☐			

Yellow Island Aquaculture (1994) Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Inventory Records – Inventory records not kept on site	Yellow Island (216)
Inspection Records – Required net cage maintenance records are not kept on site.	Yellow Island (216)
Best Management Practices Plan – BMP does not include a statement the plan has been reviewed by the holder.	Yellow Island (216)
Net Cage Inspections – Water line rope not the primary attachment	Yellow Island (216)
Net Cage Inspections – Jump net does not extend at least 1 metre	Yellow Island (216)
Net Cage Inspections – Underwater inspections are not completed before a new group of fish are introduced	Yellow Island (216)
Boat Docking – Docking site not marked	Yellow Island (216)

General comments:

Ministry Water, Land and Air Protection
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*	Report Section	Compliant*
Registration	Yes ☒ No ☐	Fuel Storage and Containment	Yes ☐ No ☒
Best Management Practices	Yes ☐ No ☒	Sewage Treatment, Disposal and Record Keeping	Yes ☒ No ☐
Disposal of Blood Water	Yes ☒ No ☐	Environmental Management	Yes ☒ No ☐
Disposal of Net Cleaning Waste	Yes ☒ No ☐	Water Licence	Yes ☒ No ☐
Storage and Disposal of Disinfectant	Yes ☒ No ☐	Wildlife Predation Trapping Licence	Yes ☒ No ☐
Storage and Disposal of Morts	Yes ☒ No ☐	Wildlife Hunting Licence	Yes ☒ No ☐
Storage and Disposal of Refuse	Yes ☒ No ☐		

Yellow Island Aquaculture (1994) Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Best Management Practices – Non-compliance with requirements of sections 5.6, and standards of section 4	Yellow Island (216)
Best Management Practices – Reduction in discharge or reduction in number of quantity of potential discharges	Yellow Island (216)
Best Management Practices – Prevention of access to containment structures by wildlife	Yellow Island (216)
Best Management Practices – Finfish kill contingency plan	Yellow Island (216)
Fuel Storage and Containment – Fuels not securely stored or protected	Yellow Island (216)

Ministry of Agriculture, Food and Fisheries
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*		Report Section	Compliant*	
Terms and Conditions	Yes ☐	No ☒	Therapeutant Use & Records	Yes ☒	No ☐
Escape Reports	Yes ☒	No ☐	Net Cage Inspections	Yes ☒	No ☐
Inventory Records	Yes ☒	No ☐	Boat Docking	Yes ☐	No ☒
Inspection Records	Yes ☐	No ☒	Fish Handling	Yes ☒	No ☐
Best Management Practices Plan	Yes ☐	No ☒	Predator Control	Yes ☒	No ☐
Escape Response	Yes ☒	No ☐			

Ewos Aquaculture Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Terms and Conditions – Site configuration	Obstruction Island (507), Saranac (527), Westside (1472), Dixon (234), Ross Passage (314), Miller (1507)
Inspection Records – Daily visual observations not recorded in a log	Westside (1472)
Inspection Records – Net cage records do not include; records of the most recent out of water servicing and inspection	Dixon (234)
Best Management Practices Plan – BMP is not on site	Obstruction Island (507)
Boat Docking – Docking site not marked	Westside (1472), Dixon (234), Ross Passage (314), Miller (1507)

General comments: **No compliance issues noted for Mussel Rock (543).**

Ministry Water, Land and Air Protection
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*	Report Section	Compliant*
Registration	Yes ☒ No ☐	Fuel Storage and Containment	Yes ☒ No ☐
Best Management Practices	Yes ☐ No ☒	Sewage Treatment, Disposal and Record Keeping	Yes ☐ No ☒
Disposal of Blood Water	Yes ☒ No ☐	Environmental Management	Yes ☒ No ☐
Disposal of Net Cleaning Waste	Yes ☒ No ☐	Water Licence	Yes ☒ No ☐
Storage and Disposal of Disinfectant	Yes ☒ No ☐	Wildlife Predation Trapping Licence	Yes ☒ No ☐
Storage and Disposal of Morts	Yes ☒ No ☐	Wildlife Hunting Licence	Yes ☒ No ☐
Storage and Disposal of Refuse	Yes ☒ No ☐		

Ewos Aquaculture Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Best Management Practices – The BMP is not on site	Mussel Rock (543)
Best Management Practices – Non-compliance with requirements of sections 5,6, and standards of section 4	Saranac (527), Westside (1472), Dixon (234), Ross Passage (314), Miller (1507)
Best Management Practices – Reduction in discharge or reduction in number of quantity of potential discharges	Saranac (527), Dixon (234), Ross Passage (314), Miller (1507)
Best Management Practices – Continued improvement in feed conversion ratio for feed fed to finfish	Ross Passage (314)
Best Management Practices – Endorsement the BMP has been reviewed and endorsed by the operation and reviewed by responsible staff	Ross Passage (314), Saranac (527)
Sewage Treatment, Disposal and Record Keeping – No washroom on site	Obstruction Island (507), Ross Passage (314), Saranac (527)
Sewage Treatment, Disposal and Record Keeping – Sewage not treated via septic tank or other authorized method	Miller (1507)

Ministry of Agriculture, Food and Fisheries
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*		Report Section	Compliant*	
Terms and Conditions	Yes ☐	No ☒	Therapeutant Use & Records	Yes ☒	No ☐
Escape Reports	Yes ☒	No ☐	Net Cage Inspections	Yes ☐	No ☒
Inventory Records	Yes ☒	No ☐	Boat Docking	Yes ☒	No ☐
Inspection Records	Yes ☒	No ☐	Fish Handling	Yes ☒	No ☐
Best Management Practices Plan	Yes ☐	No ☒	Predator Control	Yes ☒	No ☐
Escape Response	Yes ☐	No ☒			

Sonora Sea Farm Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Terms and Conditions – Site configuration	Sonora Island (211)
Terms and Conditions – Biomass	Sonora Island (211)
Best Management Practices Plan – BMP does not include a statement the plan has been reviewed by the holder.	Sonora Island (211)
Escape Response – Escape response plan not post is a visible location	Sonora Island (211)
Net Cage Inspections – Jump net does not extend at least 1 metre	Sonora Island (211)

General comments: _____

Ministry Water, Land and Air Protection
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*	Report Section	Compliant*
Registration	Yes ☒ No ☐	Fuel Storage and Containment	Yes ☐ No ☒
Best Management Practices	Yes ☐ No ☒	Sewage Treatment, Disposal and Record Keeping	Yes ☒ No ☐
Disposal of Blood Water	Yes ☒ No ☐	Environmental Management	Yes ☒ No ☐
Disposal of Net Cleaning Waste	Yes ☒ No ☐	Water Licence	Yes ☐ No ☒
Storage and Disposal of Disinfectant	Yes ☒ No ☐	Wildlife Predation Trapping Licence	Yes ☒ No ☐
Storage and Disposal of Morts	Yes ☒ No ☐	Wildlife Hunting Licence	Yes ☒ No ☐
Storage and Disposal of Refuse	Yes ☒ No ☐		

Sonora Sea Farm Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Best Management Practices – Non-compliance with requirements of sections 5.6, and standards of section 4	Sonora Island (211)
Best Management Practices – Reduction in discharge or reduction in number of quantity of potential discharges	Sonora Island (211)
Best Management Practices – Continued improvement in feed conversion ratio for feed fed to finfish	Sonora Island (211)
Best Management Practices – Prevention of feed spillage	Sonora Island (211)
Best Management Practices – Prevention of the attraction and access of wildlife to feed food and morts	Sonora Island (211)
Best Management Practices – Prevention of access to containment structures by wildlife	Sonora Island (211)
Best Management Practices – Finfish Kill Contingency Plan missing required element – Contact Number	Sonora Island (211)
Fuel Storage and Containment – Diesel tank not protected with 110% containment	Sonora Island (211)
Fuel Storage and Containment – Generator not protected with 110% containment	Sonora Island (211)
Fuel Storage and Containment – Fuels not securely stored and protected	Sonora Island (211)
Water Licence – Water licence not in place	Sonora Island (211)

Ministry of Agriculture, Food and Fisheries
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*		Report Section	Compliant*	
Terms and Conditions	Yes ☐	No ☒	Therapeutant Use & Records	Yes ☐	No ☒
Escape Reports	Yes ☒	No ☐	Net Cage Inspections	Yes ☒	No ☐
Inventory Records	Yes ☒	No ☐	Boat Docking	Yes ☒	No ☐
Inspection Records	Yes ☐	No ☒	Fish Handling	Yes ☐	No ☒
Best Management Practices Plan	Yes ☐	No ☒	Predator Control	Yes ☒	No ☐
Escape Response	Yes ☒	No ☐			

Omega Salmon Group Ltd.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Terms and Conditions – Site configuration	Lee's Bay (100), Raynor (1198), Doyle (1288), Cleagh (1376)
Terms and Conditions – Biomass	Doyle (1288), Cleagh (1376)
Inspection Records – Net cage maintenance records no kept onsite	Glacial Creek (303)
Best Management Practices Plan – BMP does not include a statement the plan has been reviewed by the holder.	Lee's Bay (100), Shelter Bay (831), Shaw Point (1136), Raynor (1198), Doyle (1288), Cleagh (1376), Marsh Bay (1351)
Therapeutant Use & Records – Drug records not maintained	Raynor (1198)
Fish Handling – Catch nets are not used for transporting, harvesting, grading, sampling and moving fish	Cleagh (1376)

General comments: **No compliance issues noted for Homfry (402).**

Ministry Water, Land and Air Protection
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*	Report Section	Compliant*
Registration	Yes ☐ No ☒	Fuel Storage and Containment	Yes ☐ No ☒
Best Management Practices	Yes ☐ No ☒	Sewage Treatment, Disposal and Record Keeping	Yes ☐ No ☒
Disposal of Blood Water	Yes ☒ No ☐	Environmental Management	Yes ☒ No ☐
Disposal of Net Cleaning Waste	Yes ☐ No ☒	Water Licence	Yes ☒ No ☐
Storage and Disposal of Disinfectant	Yes ☐ No ☒	Wildlife Predation Trapping Licence	Yes ☒ No ☐
Storage and Disposal of Morts	Yes ☒ No ☐	Wildlife Hunting Licence	Yes ☒ No ☐
Storage and Disposal of Refuse	Yes ☒ No ☐		

Omega Salmon Group Ltd.

Company Name

***IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS**

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Registration – Site not registered	Lee's Bay (100), Shelter Bay (831), Raynor (1198), Doyle (1288), Cleagh (1376), Marsh Bay (1351), Homfrey (402), Glacial Creek (303)
Best Management Practices – The BMP is not on site	Cleagh (1376)
Best Management Practices – Non-compliance with requirements of sections 5,6, and standards of section 4	Lee's Bay (100), Shaw Point (1136), Raynor (1198)
Best Management Practices – Reduction in discharge or reduction in number of quantity of potential discharges	Shaw Point (1136), Raynor (1198), Marsh Bay (1351)
Best Management Practices – Continued improvement in feed conversion ratio for feed fed to finfish	Raynor (1198), Marsh Bay (1351)
Best Management Practices – Prevention of feed spillage	Raynor (1198)
Best Management Practices – Endorsement the BMP has been reviewed and endorsed by the operation and reviewed by responsible staff	Lee's Bay (100)
Best Management Practices – Finfish Kill Contingency Plan missing required element – Contact Number	Raynor (1198)
Disposal of Net Cleaning Waste – Non-compliant with disposal of net waste	Glacial Creek (303)
Storage and Disposal of Disinfectant – Improper storage of disinfectants	Cleagh (1376)
Fuel Storage and Containment – Generator not protected with 110% containment	Homfrey (402), Shaw Point (1136), Cleagh (1376)
Fuel Storage and Containment – Fuels not securely stored and protected	Lee's Bay (100), Shaw Point (1136)
Sewage Treatment, Disposal and Record Keeping – Sewage maintenance records not kept	Lee's Bay (100), Shaw Point (1136), Doyle (1288),

Ministry of Agriculture, Food and Fisheries
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*		Report Section	Compliant*	
Terms and Conditions	Yes ☐	No ☒	Therapeutant Use & Records	Yes ☒	No ☐
Escape Reports	Yes ☒	No ☐	Net Cage Inspections	Yes ☐	No ☒
Inventory Records	Yes ☒	No ☐	Boat Docking	Yes ☐	No ☒
Inspection Records	Yes ☒	No ☐	Fish Handling	Yes ☒	No ☐
Best Management Practices Plan	Yes ☐	No ☒	Predator Control	Yes ☒	No ☐
Escape Response	Yes ☒	No ☐			

Stolt Sea Farm Inc.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Terms and Conditions – Site configuration	Port Elizabeth (141), Brougham Point (388), Swanson Island (465), Glacier Falls (821), Potts Bay (1145), Monday Rock (1237), Mahatta West (1238)
Terms and Conditions – Biomass	Swanson Island (465), Dr Islets (1586)
Best Management Practices Plan – BMP does not include a statement the plan has been reviewed by the holder.	Port Elizabeth (141), Larsen Island (143), Brougham Point (388), Swanson Island (465), Arrow Pass (466), Midsummer Island (467), Glacier Falls (821), Dr Islets (1586)
Best Management Practices Plan – BMP not on site	Blunden Passage (142), Humphrey Rock (1618)
Net Cage Inspections – Jump net does not extend at least 1 metre	Mahatta West (1238)
Net Cage Inspections – Underwater inspections are not completed before a new group of fish are introduced	Sargeaunt Pass (1059)
Boat Docking – Docking site not marked	Blunden Passage (142), Humphrey Rock (1618)

General comments: **No compliance issues noted for Koskimo (144) or Mahatta East (1338).**

Ministry Water, Land and Air Protection
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*	Report Section	Compliant*
Registration	Yes ☒ No ☐	Fuel Storage and Containment	Yes ☐ No ☒
Best Management Practices	Yes ☐ No ☒	Sewage Treatment, Disposal and Record Keeping	Yes ☐ No ☒
Disposal of Blood Water	Yes ☒ No ☐	Environmental Management	Yes ☐ No ☒
Disposal of Net Cleaning Waste	Yes ☒ No ☐	Water Licence	Yes ☐ No ☒
Storage and Disposal of Disinfectant	Yes ☐ No ☒	Wildlife Predation Trapping Licence	Yes ☒ No ☐
Storage and Disposal of Morts	Yes ☒ No ☐	Wildlife Hunting Licence	Yes ☒ No ☐
Storage and Disposal of Refuse	Yes ☒ No ☐		

Stolt Sea Farm Inc.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Best Management Practices – The BMP is not on site	Humphrey Rock (1618)
Best Management Practices – No endorsement that the BMP has been reviewed and endorsed by the operation and reviewed by responsible staff	Glacier Falls (821), Humphrey Rock (1618)
Best Management Practices – Finfish Kill Contingency Plan missing required element – Contact Number	Glacier Falls (821), Humphrey Rock (1618)
Storage and Disposal of Disinfectant – Improper storage of disinfectants	Potts Bay (1145)
Fuel Storage and Containment – Fuels not securely stored and protected	Koskimo (144), Sargeaunt Pass (1059), Monday Rock (1237), Mahatta West (1238), Mahatta East (1338), Humphrey Rock (1618)
Sewage Treatment, Disposal and Record Keeping – Sewage not discharged via a 15 metre pipe	Brougham Point (388)
Sewage Treatment, Disposal and Record Keeping – Sewage maintenance records not kept	Koskimo (144), Brougham Point (388), Glacier Falls (821), Monday Rock (1237), Mahatta West (1238), Mahatta East (1338), Humphrey Rock (1618)
Environmental Management – There is not adequate spill equipment on site	Mahatta West (1238), Mahatta East (1338)
Water Licence – Water licence not in place	Mahatta West (1238), Mahatta East (1338), Brougham Point (388)

General comments: **No compliance issues noted for Port Elizabeth (141), Blunden Passage (142), Larsen Island (143), Swanson Island (465), Arrow Pass (466), Midsummer Island (467), or Dr Islets (1586).**

Ministry of Agriculture, Food and Fisheries
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*		Report Section	Compliant*	
Terms and Conditions	Yes ☐	No ☒	Therapeutant Use & Records	Yes ☒	No ☐
Escape Reports	Yes ☒	No ☐	Net Cage Inspections	Yes ☐	No ☒
Inventory Records	Yes ☒	No ☐	Boat Docking	Yes ☐	No ☒
Inspection Records	Yes ☐	No ☒	Fish Handling	Yes ☒	No ☐
Best Management Practices Plan	Yes ☐	No ☒	Predator Control	Yes ☒	No ☐
Escape Response	Yes ☒	No ☐			

Nutreco Canada Inc.

Company Name

***IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS**

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Terms and Conditions – Site configuration	Charlie's Place (1554), Lochalsh (884), Hoskyn Channel (137), Conville Point (248), Church House (1626), Young Pass (769), Hohoae Island (1158), Arthur Island (1598), Sonora Point (380)
Terms and Conditions – Biomass	Charlie's Place (1554)
Inspection Records – Required net cage maintenance records are not kept on site.	Lochalsh (884), Hoskyn Channel (137), Conville Point (248), Orchard Bay (108)
Best Management Practices Plan – BMP does not include a statement the plan has been reviewed by the holder.	Church House (1626), Read Island (547), Cyrus Rocks (733), Orchard Bay (108)
Net Cage Inspections – Water line rope not the primary attachment	Read Island (547), Sonora Point (380)
Net Cage Inspections – Jump net does not extend at least 1 metre	Sonora Point (380)
Net Cage Inspections – There is not sufficient weight provided for taut panels	Sonora Point (380)
Boat Docking – Docking site not marked	Charlie's Place (1554), Church House (1626), Young Pass (769), Orchard Bay (108), Saltspring Island (56), Sonora Point (380)

General comments: **No compliance issues noted for Jackson Pass (1580).**

Ministry Water, Land and Air Protection
SITE INSPECTION SUMMARY COMPLIANCE REPORT – 2003 Inspection Cycle

Report Section	Compliant*	Report Section	Compliant*
Registration	Yes ☐ No ☒	Fuel Storage and Containment	Yes ☐ No ☒
Best Management Practices	Yes ☐ No ☒	Sewage Treatment, Disposal and Record Keeping	Yes ☐ No ☒
Disposal of Blood Water	Yes ☒ No ☐	Environmental Management	Yes ☐ No ☒
Disposal of Net Cleaning Waste	Yes ☒ No ☐	Water Licence	Yes ☐ No ☒
Storage and Disposal of Disinfectant	Yes ☒ No ☐	Wildlife Predation Trapping Licence	Yes ☒ No ☐
Storage and Disposal of Morts	Yes ☒ No ☐	Wildlife Hunting Licence	Yes ☒ No ☐
Storage and Disposal of Refuse	Yes ☒ No ☐		

Nutreco Canada Inc.

Company Name

*IF NOT IN COMPLIANCE, SEE BELOW FOR DETAILS

Area(s) of Non-Compliance	Site(s) Name and MAFF Reference Number
Registration – Site not registered	Saltspring Island (56)
Best Management Practices – Non-compliance with requirements of sections 5,6, and standards of section 4	Charlie's Place (1554)
Fuel Storage and Containment – Diesel tank not protected with 110% containment	Cyrus Rocks (733), Saltspring Island (56)
Fuel Storage and Containment – Generator not protected with 110% containment	Conville Point (248), Cyrus Rocks (733), Saltspring Island (56), Sonora Point (380)
Sewage Treatment, Disposal and Record Keeping – Sewage not treated via septic tank or other authorized method	Sonora Point (380)
Sewage Treatment, Disposal and Record Keeping – Sewage not discharged via a 15 metre pipe	Orchard Bay (108)
Sewage Treatment, Disposal and Record Keeping – Sewage maintenance records not kept	Read Island (547), Cyrus Rocks (733), Orchard Bay (108)
Environmental Management – No spill contingency plan available on site	Cyrus Rocks (733)
Environmental Management – Spill reporting number not posted	Cyrus Rocks (733)
Water Licence – No water licence in place	Charlie's Place (1554), Church House (1626), Read Island (547), Orchard Bay (108)

General comments: **No compliance issues noted for Lohalash (884), Jackson Pass (1580), Hoskyn Channel (137), Young Pass (769), Hohoae Island (1158), or Arthur Island (1598).**

MARINE FINFISH COMPLIANCE MATRIX – May 12, 2003

COMPLIANCE ISSUE	LEGISLATION CONTRAVENED	LICENSEE ACTION REQUIRED	TIMELINE FOR COMPLETION OF REQUIRED ACTION	LICENSEE FOLLOW-UP	ENFORCEMENT ACTION/AGENCY
Disposal of blood water directly to environment	Section 3(2) Waste Management Act/ Section 36(3) Fisheries Act (federal)	Subject to the Regional Waste Manager's direction	As directed	As directed	MAFF to forward non-compliance occurrences to Regional Waste Manager on a case by case basis. Action to be determined based upon a review of the specific fact pattern and compliance history.
Disposal of net cleaning waste directly to environment resulting from major net cleaning (does not include in situ day to day maintenance)	Section 3(2) Waste Management Act/Section 36(3)Fisheries Act (federal)	Subject to the Regional Waste Manager's direction	As directed	As directed	MAFF to forward non-compliance occurrences to Regional Waste Manager on a case by case basis. Action to be determined based upon a review of the specific fact pattern and compliance history.
Disposal of morts w/o permit/approval	Section 3(2) Waste Management Act	Cease burning/burying etc. of morts. Dispose at approved facility	Immediately	Provide documentation to inspector to verify use of approved facility	Consult with WLAP for direction. Minor amount of morts may result in issuance of ticket whereas major amounts likely to result in formal investigation
Non marine mammal predator (wildlife) trapping/killing w/o permit or using licensed trapper	Section 11 and 26 Wildlife Act	Cease trapping/killing. Obtain a permit or the services of licensed trapper for predator control/or closed season authorization.	Immediately	Provide documentation to inspector to confirm issuance of a permit or the use of licensed trapper	Violation ticket for first offence issued by MAFF. Formal investigation by WLAP for subsequent occurrences.
Disposal of refuse – burning or burying of wastes	Section 3(2) Waste Management Act	Cease burning/burying of wastes	Immediately	Provide written confirmation as to disposal methods to inspector within 14 days	Violation ticket for first offence issued by MAFF. Formal investigation by WLAP for subsequent occurrences.
Predator prevention carcass disposal to land w/o permit/approval	Section 3(2) Waste Management Act	Dispose carcass at approved facility or Apply for Waste Management Permit and Land Tenure for disposal site	Within 30 days	Provide documentation to inspector confirming use of approved facility or copy of applications	Violation ticket for first offence issued by MAFF. Formal investigation by WLAP for subsequent occurrences.
Disposal of disinfectants directly to environment	Section 3(2) Waste Management Act/ Section 36(3) Fisheries Act (federal)	Follow disposal requirements of MSDS and/or dispose at an approved disposal facility	Immediately	Confirm disposal practices/facility to inspector within 14 days	Consult with WLAP for direction.
Fail to provide 110% containment for fuel storage	BC Fire Code (1998)	Install 110% containment for fuel.	N/A	Provide written confirmation of resolution to inspector within 60 days.	File to be referred to the Office of the Fire Commissioner for resolution
Fail to conduct environmental monitoring of a new facility prior to applying for registration	Section 3(1) - Finfish Aquaculture Waste Control regulation	Conduct environmental monitoring	Subject to Regional Waste Manager's direction	Provide documentation to inspector confirming environmental monitoring has been completed and submitted to Regional Waste Manager	Formal investigation by WLAP
Stock a facility with fish without registering the facility in accordance with the Aquaculture Waste Control regulation	Section 3(2) - Finfish Aquaculture Waste Control regulation	Submit registration to the Regional Waste Manager	Within 14 days	Provide documentation to inspector confirming registration submitted to Regional Waste Manager	Formal investigation by WLAP
Effective September 21, 2003 – mean free sulphide concentration on soft bottom at or beyond 30 meters from 0 meter station is statistically significantly greater than 6000 micormolar	Section 4(1) - - Finfish Aquaculture Waste Control regulation	Submit a remedial action plan to the Regional Waste Manager, and immediately thereafter implement the plan	Within 30 days of environmental monitoring	Implement remedial action plan	Formal investigation by WLAP
Effective September 21, 2003 – mean taxon richness or mean total abundance at a sampling facility on a soft bottom at or beyond the tenure perimeter is statistically significantly different than the mean reference or baseline	Section 4(2) - - Finfish Aquaculture Waste Control regulation	Submit a remedial action plan to the Regional Waste Manager, and immediately thereafter implement the plan	Within 30 days of environmental monitoring	Implement remedial action plan	Formal investigation by WLAP
Effective September 21, 2003 – Fail to conduct biological monitoring and and comply with pre-stocking requirements when mean free sulphide concentration on a soft bottom at or beyond the tenure perimeter is statistically significantly greater than the mean reference or baseline sulphide concentration	Section 5 – Finfish Aquaculture Waste Control regulation	Conduct biological monitoring	As determined by Regional Waste Manager	Submit biological monitoring results as directed by Regional Waste Manager	Formal investigation by WLAP.

The enforcement responses identified in the matrix are considered the preferred approach, however, the specific circumstances of each non-compliance are to be assessed in determining the appropriate enforcement response. Consultation between agencies is required on some issues of non-compliance prior to determining an enforcement response.

MARINE FINFISH COMPLIANCE MATRIX – May 12, 2003

COMPLIANCE ISSUE	LEGISLATION CONTRAVENED	LICENSEE ACTION REQUIRED	TIMELINE FOR COMPLETION OF REQUIRED ACTION	LICENSEE FOLLOW-UP	ENFORCEMENT ACTION/AGENCY
Effective March 21, 2004 – Restocks facility when mean free sulphide concentration exceeds the standards prescribed in Section 6 of the Finfish Aquaculture Waste Control regulation	Section 6(2) – Finfish Aquaculture Waste Control regulation	Action to be determined by the Regional Waste Manager	As determined by the Regional Waste Manger	As determined by the Regional Waste Manger	Formal investigation by WLAP.
Exceed maximum daily discharge rate of domestic sewage 2.5 cubic meters/day	Section 7(b)(i) - Finfish Aquaculture Waste Control regulation	Install system to meet the regulation requirements	Within 30 days	Provide documentation to inspector confirming installation of new system	Formal investigation by WLAP.
Fail to treat sewage with a septic tank designed with a retention time of less than two days prior to discharge, or device with a concentration of total suspended solids exceeding 130 mg/l	Section 7(b)(ii) - Finfish Aquaculture Waste Control regulation	Install system to meet the regulation requirements	Within 30 days	Provide documentation to inspector confirming installation of new system	Formal investigation by WLAP.
Disposal of sewage at a discharge point less than 15 meters below surface of the water	Section 7(b)(iii) - Finfish Aquaculture Waste Control regulation	Install a 15 meter outfall pipe as per regulation requirements.	Within 30 days	Provide documentation to inspector confirming outfall pipe extension.	Formal investigation by WLAP.
Fail to maintain records related to construction/operation and maintenance of sewage treatment works for inspection by manager or officer	Section 7(iv) - Finfish Aquaculture Waste Control Regulation.	Ensure records are maintained	Immediately	Provide documentation to inspector confirming records are maintained	Violation ticket for first offence issued by MAFF. Formal investigation by WLAP for subsequent occurrences.
Fail to keep a copy of the BMP plan at facility	Section 8(3)(a) - Finfish Aquaculture Waste Control Reg.	Ensure BMP Plan is onsite at facility	Within 60 days	Provide written confirmation to inspector within 30 days of the date the BMP's were finalized that BMP's are onsite at facility	Violation ticket for first offence issued by MAFF. Formal investigation by WLAP for subsequent occurrences.
Fail to make the BMP plan available upon request of the manager or an officer	Section 8(3)(a) - Finfish Aquaculture Waste Control Reg.	Produce a copy of the BMP Plan	Immediately	N/a	Violation ticket for first offence issued by MAFF. Formal investigation by WLAP for subsequent occurrences.
Fail to amend the BMP plan whenever there is a change in the facility which materially increases the release/potential release of harmful materials	Section 8(3)(b) - Finfish Aquaculture Waste Control Reg.	Amend the BMP plan	Within 30 days	Provide written confirmation to inspector within 7 days of the BMP being amended	Violation ticket for first offence issued by MAFF. Formal investigation by WLAP for subsequent occurrences.
Fail to conduct environmental monitoring	Section 9 - Finfish Aquaculture Waste Control Reg.	Undertake environmental monitoring	Within 30 days of prescribed sampling timeframe, or as directed by Regional Waste Manager	As determined by Regional Waste Manager	Formal investigation by WLAP.
Fail to submit environmental monitoring results	Section 10 - Finfish Aquaculture Waste Control Reg.	Submit environmental monitoring results to Regional Waste Manager	Within 14 days	Confirmation to inspector that results forwarded to Regional Waste Manager	Formal investigation by WLAP.
Fail to report information required in Section 10(5) of the Aquaculture Waste Control regulation	Section 10(5) - Finfish Aquaculture Waste Control Reg.	Submit environmental monitoring results to Regional Waste Manager	Within 14 days	Confirmation to inspector that results forwarded to Regional Waste Manager	Formal investigation by WLAP.
Fail to notify Regional Waste manager w/i 24 hrs of implementing fish kill contingency plan	Section 10(6) - Finfish Aquaculture Waste Control Reg.	Notify Regional Waste Manager	Immediately	N/A	Formal investigation by WLAP.

The enforcement responses identified in the matrix are considered the preferred approach, however, the specific circumstances of each non-compliance are to be assessed in determining the appropriate enforcement response. Consultation between agencies is required on some issues of non-compliance prior to determining an enforcement response.

MARINE FINFISH COMPLIANCE MATRIX – May 12, 2003

COMPLIANCE ISSUE	LEGISLATION CONTRAVENED	LICENSEE ACTION REQUIRED	TIMELINE FOR COMPLETION OF REQUIRED ACTION	LICENSEE FOLLOW-UP	ENFORCEMENT ACTION/AGENCY
Exceed Management plan biomass levels	Fisheries Act – Condition of Licence	Submit a revised management plan or adjust Production level	Within 30 days	Verification to MAFF in writing of reduced production or submission of a management plan	Need for consultation between MAFF and WLAP to evaluate environmental impacts. If non-compliance has resulted in environmental waste standard being exceeded, requires referral to WLAP for investigation. Review of compliance history by MAFF Inspection staff, and where appropriate, in liaison with biological staff, for farm to determine status of MP history for site, and/or previous warnings to company. If compliance history is poor, formal referral to WLAP for investigation. For new instances of excess biomass production, violation ticket to be issued where the company has not responded to MAFF's initial inspection request. (the ticket will be for failure to comply with licence conditions) Formal investigation by WLAP for subsequent occurrences.
Unapproved species on site	Fisheries Act – Condition of Licence	Submit a revised management plan or remove unauthorized species	Within 30 days	Verification to MAFF in writing by way of management plan submission or company verifies they have removed unauthorized species	Depending upon review of compliance history of company, MAFF refers the matter for investigation to WLAP immediately, or subsequent to the company failing to submit a revised management plan.
Operating a facility without a licence	Fisheries Act	Fisheries Act			Referral directly to WLAP – noting differences between unlicensed operations and delays in licence renewals.
Failure to submit required reports or records	Fisheries Act	Submit requested reports	Within requested timeframe	Reports to be submitted within 60 days of the identified deadline	Violation tickets or warnings if reports not received and responded to MAFF request. Formal investigation by WLAP for subsequent occurrences.
Failure to report suspected escapes verbally or in writing	Fisheries Act – Aquaculture Regulation	Report 24 hours verbal In writing 7 days Implement immediate corrective action	Immediate/seven days	N/A	Violation ticket or warning issued by MAFF where the report is suspected and no fish are lost. Formal investigation by WLAP for subsequent occurrences or if the inspector believes there has been a significant escape
Failure to report an escape verbally or in writing	Fisheries Act – Aquaculture Regulation	Report 24 hours verbal In Writing 7 days Implement immediate corrective action	Immediate/seven days	N/A	Warning or violation ticket issued by MAFF. Where the inspector believes there may be a significant loss of fish, or for repeat occurrences refer to WLAP for formal investigation and RCC.
Unauthorized release of fish	Fisheries Act – Aquaculture Regulation	Report 24 hours verbal In Writing 7 days Implement immediate corrective action	Immediate/seven days	N/A	Referral to WLAP for investigation and RCC.
Unauthorized escape of fish	Fisheries Act – Aquaculture Regulation	Report 24 hours verbal In Writing 7 days Implement immediate corrective action	Immediate/seven days	N/A	Where there may be a significant loss of fish the file to be turned over directly to WLAP for formal investigation and RCC
Fail to comply with therapeutant use and drug record keeping	Fisheries Act - Aquaculture Regulation	Adjust record keeping to regulations	Immediate	Verification to MAFF in writing to confirm adjustment has been made.	Warning or violation ticket for noncompliance issued by MAFF. Formal investigation by WLAP for subsequent occurrences.
Fail to comply with requirements for Inventory, training and maintenance Records and Reports	Fisheries Act – Aquaculture Regulation	Adjust record keeping to regulations	Within 30 days	Verification to MAFF in writing to confirm adjustment has been made	Warning and or violation ticket issued by MAFF if corrective measures have not been implemented. Referral to WALP for continued/subsequent occurrences.
Processing fish on site w/o license	Fisheries Act – Aquaculture Regulation	Cease activity	Immediate	Verification to MAFF in writing may be requested	Warning or violation ticket issued by MAFF. Formal investigation by WLAP for subsequent occurrences
Obstruction	Fisheries Act – Aquaculture Regulation	N/A	N/A	N/A	Referral to WLAP for formal investigation
Containment Structures, Cage Support, Design Installation and Maintenance	Fisheries Act – Aquaculture Regulation Appendix 2	Consult with MAFF on design and construction approval requirements	Within 30 days	Verification to MAFF in writing the company has reviewed and implemented corrective measures	Warning or violation ticket issued by MAFF. Formal investigation by WLAP for continued/subsequent occurrences

The enforcement responses identified in the matrix are considered the preferred approach, however, the specific circumstances of each non-compliance are to be assessed in determining the appropriate enforcement response. Consultation between agencies is required on some issues of non-compliance prior to determining an enforcement response.

MARINE FINFISH COMPLIANCE MATRIX – May 12, 2003

COMPLIANCE ISSUE	LEGISLATION CONTRAVENED	LICENSEE ACTION REQUIRED	TIMELINE FOR COMPLETION OF REQUIRED ACTION	LICENSEE FOLLOW-UP	ENFORCEMENT ACTION/AGENCY
Fail to meet Net Cage Mesh Strength	Fisheries Act – Aquaculture Regulation Appendix 2	Net strength failure – company to immediately remove net	Immediate	Verification to MAFF in writing that net has been removed	If non compliant to the request to remove net, referral to WLAP for investigation.
Fail to maintain Net Servicing Records and Net Tagging	Fisheries Act – Aquaculture Regulation Appendix 2	Implement measures to correct deficiencies in record keeping	Within 30 days	Verification to MAFF in writing corrective measure have been implemented	Warning or Violation tickets issued by MAFF. Formal investigation by WLAP for continued/subsequent occurrences.
Improper Boat Operations	Fisheries Act – Aquaculture Regulation Appendix 2	Implement corrective measures to ensure proper boat usage	Within 30 days	Verification to MAFF in writing that corrective measures have been implemented	Warning or violation ticket issued by MAFF. Formal investigation by WLAP for continued/subsequent occurrences.
Fail to comply with operational activities	Fisheries Act – Aquaculture Regulation Appendix 2	Implement corrective measures	Within 30 days	Verification to MAFF in writing that corrective measures have been implemented	Warning or violation ticket issued by MAFF. Formal investigation by WLAP for continued/subsequent occurrences.
Fail to implement/follow Best Management Practices	Fisheries Act – Aquaculture Regulation Appendix 2	Implement identified corrective measures	Within 30 days	Verification to MAFF in writing that corrective measures have been implemented	Warning or Violation ticket issued by MAFF. Formal investigation by WLAP for continued/subsequent occurrences.
Fail to comply with training requirements for escape response	Fisheries Act – Aquaculture Regulation Appendix 2 - As to the development, posting and staff training associated with escape response	Implement identified corrective measures	Within 30 days	Verification to MAFF in writing that corrective measures have been implemented	Warning or Violation ticket issued by MAFF. Formal investigation by WLAP for continued/subsequent occurrences.
Fail to implement corrective action to prevent further escapes	Fisheries Act – Aquaculture Regulation Appendix 2 - As to failure to ensure corrective action implemented to prevent further escapes;	N/A	Immediate	N/A	Formal investigation by WLAP
Use of lake or stream water without a water license	As to take measures to attempt to recapture Section 41(1)(m) Water Act	Apply for Water license or cease use of water	Within 30 days	Provide confirmation to inspector that use of water has ceased, or a license application has been submitted.	Upon referral, LWBC will review MAFF inspection report and notify the client of required action. MAFF and WLAP will be copied. If warranted, LWBC will commence enforcement action in coordination with WLAP.
Operating a facility without a tenure	Land Act	Land Act			Referral directly to LWBC – noting differences between untenured operations and delays in tenure renewals. LWBC will review MAFF inspection report and notify the client in writing of necessary action. MAFF and WLAP will be cc'd. If warranted, LWBC will commence trespass action in coordination with WLAP.
Improvements located outside Land tenure boundaries	Land Act	Comply with existing tenure or arrange a meeting to discuss with LWBC (MAFF inspector to notify LWBC)	Within 30 days	Provide confirmation improvements are within tenure or supply an amendment application package and new management plan	LWBC will review MAFF inspection report and notify the client in writing of necessary action. MAFF and WLAP will be cc'd. If warranted, LWBC will commence trespass action in coordination with WLAP.
Improvements do not comply with Management plan	Land Act	Comply with existing management plan or arrange a meeting to discuss with LWBC and MAFF (MAFF inspector to notify LWBC and MAFF licensing section)	Within 30 days	Provide confirmation improvements comply with management plan or submit new management plan	LWBC will review MAFF inspection report in consultation with MAFF Licencing Section and notify the client in writing of necessary action. MAFF and WLAP will be cc'd.

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B.C. Reg. 256/2002
O.C. 836/2002

Deposited September 12, 2002

Waste Management Act

FINFISH AQUACULTURE WASTE CONTROL REGULATION

Contents

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2 Introduction of waste into the environment
3 Registration
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8 Best management practices plan
9 Monitoring
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12 Annual fees
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Schedule A — Baseline Inventory
Schedule B — Operational Monitoring

Definitions

1 In this regulation:

"abundance" means the number of individual organisms or percent cover of a particular taxon in the benthic community at the Linnaean classification system level of

(a) family, for soft bottoms, and

(b) class, for hard bottoms;

"application" means application under section 3;

"bag cage" means an enclosure in a marine environment made of material impermeable to water and used to contain finfish;

"baseline" means before a facility begins operating;

"Beggiatoa" is a genus of bacteria that forms white mats on the sediment surface in areas of

intense organic enrichment;

"benthic" means on or in the seabed;

"benthic community" means the assemblage of organisms inhabiting the seabed;

"biota" means the benthic flora and fauna;

"BMP" means a Best Management Practices Plan described in section 8;

"Capitella" is a genus of polychaete that thrives in areas of intense organic enrichment;

"containment structures" means net cages, bag cages, tanks, and similar structures used to contain finfish for the purposes of aquaculture;

"containment structure array" means a group of containment structures physically attached to each other;

"DGPS" means a differential global positioning system;

"domestic sewage" means human excrement, water-borne human excretion or the water-carried wastes from liquid or non-liquid culinary uses, washing, cleansing, laundering, food processing or ice production;

"dry weight" means the gravimetric determination of the total residue left in a vessel after drying feed of the type used at the facility at a temperature of 103 to 105 degrees Celsius until the weight of the residue is constant;

"epifauna" means animals that live on top of the substratum;

"facility" means a finfish aquaculture farm located in marine water at a site licensed under section 14 of the *Fisheries Act;*

"facility sampling station" does not include a reference station;

"finfish" means fish of the classes Agnatha, Chondrichthyes or Osteichthyes grown by an operator;

"fish kill" means an amount of finfish equivalent to 4 000 kilograms or more that died within a 5 consecutive day period at a facility;

"footprint" means the area of the seabed on which there is a measurable accumulation of particulate wastes, or waste by-products, originating from a containment structure or a containment structure array and deposited by normal ocean currents;

"free sulphide" means sulphide ions not chemically bound to any other chemical constituent as measured following sections 3 to 5 of Protocols for Marine Environmental Monitoring (WLAP 2002);

"hard bottom" means a seabed composed of rock, shell or other hard materials that cannot be sampled by sediment grab sampling devices;

"infauna" means animals that live within the substratum;

"L&WBCI" means the Land & Water British Columbia Inc.;

"macrofauna" means animals with body sizes on the scale of millimetres;

"MAFF" means the Ministry of Agriculture, Food and Fisheries of British Columbia;

"management plan" means a Marine Commercial Finfish Aquaculture Management Plan required when applying for a licence for aquaculture under the *Fisheries Act,* for a tenure, or for a renewal of either;

"manager" has the same meaning as in section 1 of the *Waste Management Act;*

"megafauna" means animals with body sizes on the scale of centimetres;

"mortalities" means facility raised finfish that

(a) have died, and

(b) are not harvested for human consumption;

"net cage" means a net enclosure used to contain finfish;

"officer" has the same meaning as in section 1 of the *Waste Management Act;*

"operational monitoring" means gathering information as discussed in Schedule B;

"operator" means a person who oversees the operation of a facility and who

(a) owns the facility, or

(b) is authorized by the owner to act for the owner respecting the operation of the facility;

"peak biomass" means maximum biomass of finfish within a facility during a production cycle;

"perimeter of containment structure" means the outside edge of the containment structure wherever the structure is located at the time of sampling;

"probable footprint" means the likely footprint associated with proposed locations of containment structures, or containment structure arrays, determined by using a method which satisfies the criteria in Schedule B or by using an alternative method approved by a manager;

"production cycle" means the period of time from stocking the containment structures to the time of harvest or removal of all finfish from the containment structures;

"qualified professional" means an applied scientist or technologist acting within that profession's field of professional practice who

(a) is registered in British Columbia with an appropriate professional association, acts under that professional association's code of ethics, and is subject to disciplinary action by that professional association, and

(b) through suitable education, experience, accreditation and knowledge may be reasonably relied on to provide advice in designing and conducting aquatic impact assessment programs;

"reference station" means a sampling station

(a) within 0.5 to 2.0 kilometres from the tenure,

(b) having the same types of habitats and similar hydrographic, physical and morphological characteristics as the facility sampling stations, and

(c) representing background variation;

"sampling station" means a location where samples are taken or variables are measured or observed;

"soft bottom" means a seabed composed of gravel, sand, mud or similar materials that can be sampled using sediment grab sampling devices;

"statistically significant" means an observed effect so large that it would rarely occur by chance as described in Section 7 of Protocols for Marine Environmental Monitoring (WLAP 2002);

"taxon richness" means the number of taxa in the benthic community at the Linnaean classification system level of

(a) family, for soft bottoms, and

(b) class, for hard bottoms;

"tenure" means

(a) a contiguous area of land that is owned, leased or otherwise lawfully occupied by a person, or

(b) areas of land whether contiguous or not that are occupied under a single

(i) lease, or

(ii) licence of occupation

granted under the *Land Act* for a facility;

"WLAP" means the Ministry of Water, Land and Air Protection of British Columbia;

"wastes" includes finfish feed, finfish faeces, mortalities, bloodwater, materials from net washing, disinfectants, refuse and domestic sewage;

"zero metre station" means a fixed, DGPS location, at the perimeter of the containment structure and on each transect described in Schedule B measured at higher high water referenced to chart datum.

Introduction of waste into the environment

2 Waste may be introduced within a tenure into the environment in accordance with this regulation.

Registration

3 (1) The operator of a facility that commences operation for the first time on or after the date this regulation comes into force must have monitored the facility in accordance with Schedule A before applying for registration of the facility under this regulation.

(2) Subject to subsection (3), an operator must not stock a facility with finfish unless the facility is registered under this regulation.

(3) An operator must apply to a manager for registration of a facility under this regulation,

(a) if the facility was in operation before this regulation was enacted, within 90 days after the coming into force of this regulation, and

(b) if the facility commences operation on or after the date this regulation comes into force, on or before commencement of operation of the facility.

(4) The application for registration under subsection (3) must be submitted directly to the manager in electronic form, or in another form and manner acceptable to the manager, and must include:

(a) the business name, mailing address, telephone number and fax number of the operator;

(b) the registered name and address of the operator;

(c) the common name and geographical description of the facility;

(d) location maps showing

(i) general location of the facility at 1:50 000 to 1:150 000, and

(ii) geo-referenced location of the facility to Crown lands tenure of the facility on British Columbia Geographic System (cadastral) map at 1:20 000;

(e) a 1:5 000 scale aerial view diagram showing the tenure boundaries and the proposed layout of all structures at the site;

(f) the aquaculture licence number issued under the *Fisheries Act;*

(g) the aquatic land tenure file number issued under the *Land Act;*

(h) in accordance with the provisions of Schedule A of this regulation,

(i) baseline inventory including currents information, if the facility commences operation after the coming into force of this regulation, and

(ii) currents information for existing facilities for which this information has not yet been provided under the Interim Monitoring Program conducted in 2000 and 2001 for WLAP;

(i) the design production rate in tonnes for each production cycle and the number and species of finfish to be stocked;

(j) the planned monthly feeding summary over the production cycle and stocking densities;

(k) the number and dimensions of containment structures to be used;

(l) the total dry weight of feed usage in tonnes, for the production cycle prior to registration, or, for new facilities, the estimated dry weight feed in tonnes expected to be used for the first production cycle of operation;

(m) further information if any specified by the manager.

(5) If the information described in subsection (4) is included in the management plan for an aquaculture licence under the *Fisheries Act,* the management plan may be submitted as the application to register under subsection (3).

(6) The manager may give written notice to a person within 30 days of receipt of an application from the person requiring that the application be revised to conform to the requirements of this regulation.

(7) Registration under this section takes effect on the later of

(a) the date the application is received by the manager, or

(b) if written notice is given under subsection (6), the date the manager is satisfied with the revisions to the application.

(8) An operator must, within 30 days of changes to the information submitted under subsection (4), submit revised information to the manager in the form and manner required by subsection (4) for

(a) a change in information described in subsection (4) (a) to (g),

(b) a change of 20% or more to parameters described in subsection (4) (i) or (j), and

(c) a change of 20% or more to volume of containment structures described in subsection (4) (k).

Production cycle standards for sites with soft bottoms

4 (1) Effective September 21, 2003, and subject to section 11 (2), the mean free sulphide concentration at a facility sampling station on a soft bottom at or beyond 30 metres from the zero metre station must not be statistically significantly greater than 6 000 micromolar.

(2) Effective September 21, 2003, and subject to section 11 (2),

(a) the mean taxon richness at a facility sampling station on a soft bottom at or beyond the tenure perimeter must not be statistically significantly different than the mean reference or baseline taxon richness, and

(b) the mean total abundance at a facility sampling station on a soft bottom at or beyond the tenure perimeter must not be statistically significantly different than the mean reference or baseline total abundance.

Chemical trigger for sites with soft bottoms

5 Effective September 21, 2003, and subject to section 11 (2), if at a facility sampling station on a soft bottom at or beyond the tenure perimeter the mean free sulphide concentration is statistically significantly greater than the mean reference or baseline sulphide concentration, the operator must

(a) conduct biological monitoring in accordance with section 9 (3) and (4), and

(b) comply with the pre-stocking requirement in section 6 (3).

Pre-stocking requirements for sites with soft bottoms

6 (1) Effective March 21, 2004, and subject to section 11 (2), if at a facility sampling station on a soft bottom at or beyond 30 metres from the zero metre station the mean free sulphide concentration is statistically significantly greater than

(a) 1 300 micromolar, and

(b) the mean reference or baseline sulphide concentration,

and does not exceed the standard in section 4 (1), the operator must not stock the facility until the mean sulphide concentration at each of these stations is not statistically significantly greater than

(c) 1 300 micromolar, or

(d) the mean reference or baseline sulphide concentration.

(2) Effective March 21, 2004, and subject to section 11 (2), if at a facility sampling station on a soft bottom at or beyond 30 metres from the zero metre station the mean free sulphide concentration exceeds the standard in section 4 (1), the operator must not stock the facility until the following criteria are met:

(a) the mean free sulphide concentration at each sampling station located at the perimeter of the containment structure is not statistically significantly greater than 1 300 micromolar or statistically significantly greater than the mean reference or baseline sulphide concentration;

(b) biological samples are obtained, analyzed and reported from each sampling station in accordance with section 9 (3) and (4).

(3) Effective March 21, 2004, and subject to section 11 (2), if at a facility sampling station on a soft bottom at or beyond the tenure perimeter the mean free sulphide concentration exceeds the trigger in section 5, the operator must not stock the facility until the mean free sulphide concentration at each station located at the tenure perimeter is not statistically significantly greater than the mean reference or baseline sulphide concentration.

Domestic sewage

7 Effective 180 days after this regulation comes into force, an operator must ensure that domestic sewage produced from the facility complies with the following requirements:

(a) the sewage discharge is exempted under section 2 of B.C. Reg. 129/99, the Waste Management Act Municipal Sewage Regulation;

(b) the following apply:

(i) the maximum daily discharge rate does not exceed 2.5 m^3/day;

(ii) the domestic sewage is treated by

(A) a septic tank designed with a retention time of not less than 2 days prior to discharge, or

(B) a device other than a septic tank with the concentration of total suspended solids in the effluent not exceeding 130 mg/L;

(iii) the location of the sewage discharge point to the environment is at a depth no less than 15 metres below the surface of the water;

(iv) all records related to the construction, operation and maintenance of sewage treatment and disposal works are retained for inspection by the manager or an officer.

Best management practices plan

8 (1) Effective 180 days after the coming into force of this regulation, an operator must implement a Best Management Practices Plan for the operation and maintenance of the facility consistent with the following objectives:

(a) compliance with the requirements in sections 5 and 6 and the standards in section 4;

(b) continual reduction of the discharge or potential discharge of the number and quantity of wastes and pollutants;

(c) management of potentially harmful materials including therapeutants, therapeutic additives, anaesthetics, disinfectants, pesticides, wood preservatives, antifouling agents, bloodwater and net-cleaning wastes and wastewater to preclude spillage to the environment, and capacity to respond appropriately in the event of a spill;

(d) continual improvement in the feed conversion ratio for feed fed to finfish;

(e) prevention of the spillage of feed into the environment outside the containment structures;

(f) prevention of the attraction and access of wildlife to feed, foodstuffs and mortalities;

(g) prevention of access to containment structures by wildlife;

(h) collection of mortalities and their disposal in a timely fashion only as authorized under the *Waste Management Act* using equipment and locations that

(i) preclude spillage to the environment, and

(ii) minimize odours during storage and transportation;

(i) management in accordance with a fish kill contingency plan.

(2) The BMP must include the following:

(a) a description of specific management practices and standard operating procedures used to achieve the objectives in subsection (1);

(b) a finfish kill contingency plan;

(c) a statement that the BMP has been reviewed and endorsed by the operator and reviewed and understood by the individuals responsible for implementation of the plan.

(3) An operator must

(a) keep a copy of the BMP at the facility and make the plan available, on request, to the manager or an officer, and

(b) amend the BMP whenever there is a change in the facility which materially increases the release or potential release to the environment of harmful materials referred to in subsection (1) (c).

(4) If the manager provides a written opinion to the operator that a BMP is ineffective in achieving the objectives required by subsection (1), the operator must revise the BMP to ensure that the objectives are met.

Monitoring

9 (1) An operator must monitor the facility by

(a) surveys of hard bottoms, and

(b) sediment grab sampling of soft bottoms

at all sampling stations in accordance with Schedule B within 30 days of peak finfish biomass for each production cycle.

(2) If containment structures are relocated during a production cycle prior to conducting the monitoring required in subsection (1), the vacated site must be monitored in accordance with Schedule B within 30 days of relocating the containment structures.

(3) If the mean free sulphide concentration at a facility sampling station exceeds a level specified in section 4 or 5, the operator must repeat sulphide monitoring and undertake sediment biological sampling

(a) at least once within 30 days of the date on which the excess was measured,

(b) so that the repeat monitoring and biological sampling take place within 7 days of each other,

(c) at the same stations where the specified level was exceeded, and

(d) in accordance with Schedule B.

(4) An operator must conduct monitoring prior to stocking to confirm compliance with pre-stocking criteria in section 6 if any of the mean free sulphide concentration levels described in section 6 occur, as follows:

(a) if section 6 (1) applies, by conducting sulphide monitoring at the same stations where the specified sulphide level was exceeded;

(b) if section 6 (2) applies, by conducting

(i) sulphide monitoring at the sampling stations located at the perimeter of the containment structure, and at 30 metres from the zero metre station, and

(ii) biological monitoring at the sampling stations at 30 metres from the zero metre station,

which are on the same transects as the stations where the specified sulphide level was exceeded;

(c) if section 6 (3) applies, by conducting sulphide and biological monitoring at each station located at the tenure perimeter where the specified sulphide level was exceeded.

(5) If a containment structure is relocated back to a fallow footprint, the operator must conduct monitoring at the perimeter of the containment structure to confirm compliance with pre-stocking criteria in section 6 (2) (a) prior to stocking the containment structure.

(6) An operator must have the biological samples that are collected under subsections (3) and (4) taxonomically identified to level of family by a taxonomist accredited to perform this analysis, or by another method approved by the manager.

(7) Despite subsection (3) (a), an operator may apply to the manager to vary the requirements of that subsection for one of the following reasons:

(a) weather conditions make it impractical to sample within 30 days of the sulphide levels specified in subsection (3) being exceeded;

(b) other legitimate reason for extending the sampling periods.

(8) The monitoring and sampling procedures must be designed and supervised by a qualified professional retained by the operator until a manager gives written confirmation that the continuing supervision may be done by trained staff or a contractor.

Reporting

10 (1) An operator must report by electronic transmission directly to the manager and in a format acceptable to the manager the monitoring results in a document dated and signed by the person supervising as required under section 9 (8).

(2) The report under subsection (1) must be submitted

(a) within 30 days of monitoring for physical and chemical parameters under section 9 (1),

(b) within 90 days of monitoring by surveys for hard bottoms under section 9 (1), and

(c) within 6 months of collecting samples submitted for taxonomic identification by an accredited laboratory, under section 9 (6), and within 14 days of receipt of the results from the taxonomist.

(3) Despite subsection (2), an operator must report to the manager, within 14 days of obtaining monitoring results, if the standards or trigger in section 4 or 5 are exceeded.

(4) An operator must report by January 31 in every year the total dry weight and type of feed, including additives, used the previous calendar year.

(5) An operator must report by March 31 in every year the following for the previous calendar year:

(a) the names of all materials that are directly or indirectly released into the water during the reporting period, including therapeutants, pigments, hormones, pesticides, anaesthetics, antifouling agents, disinfectants, cleansers, therapeutic additives and zinc formulations;

(b) a summary of containment structure dimensions;

(c) the number of mortalities and disposal method used during the reporting period;

(d) a summary of monthly finfish biomass for each month during the reporting period.

(6) An operator must report fish kills to the manager within 24 hours of invoking a fish kill contingency plan.

Management changes and remediation for soft bottoms

11 (1) If the standards described in section 4 are exceeded, the operator must prepare and submit to the manager within 30 days of becoming aware of the excess, and immediately thereafter implement, a remedial action plan which shows how the pre-stocking criteria in section 6 will be met and how deviations exceeding the standards will be avoided in future production cycles.

(2) Despite subsection (1), if containment structures are relocated within the same tenure and provided the footprint at the new location does not overlap the footprint at the previously stocked locations, the footprint of the previously stocked locations will be considered fallow and will be exempt with regards to determining compliance with sections 4 and 6 for the production cycles at the new location.

Annual fees

12 (1) An operator must pay an annual fee by March 31 each year for each registration under section 3 that the operator holds for all or part of the preceding calendar year.

(2) For the purposes of calculating an annual fee under subsection (1), sections 1 and 3 and Schedule C of B.C. Reg. 299/92, the Waste Management Permit Fee Regulation apply as though

(a) the operator was a permit holder, and

(b) the registration under section 3 was a permit.

(3) For the purposes of calculating the amounts of suspended solids, ammonia and nitrogen and

nitrates discharged at a facility during a calendar year,

(a) **"suspended solids"**, **"ammonia"** and **"nitrogen and nitrates"** have the same meaning as in section 1 of B.C. Reg. 299/92, and

(b) each dry weight metric tonne of feed used at the facility, as reported under section 10 (4), in the calendar year shall be equated to an annual discharge at the facility of

(i) 186 kg of suspended solids,

(ii) 36 kg of ammonia, and

(iii) 8 kg of nitrogen and nitrates.

(4) Despite section 3 of B.C. Reg. 299/92, an annual fee under this section is only payable for the suspended solids, ammonia and nitrogen and nitrates calculated under subsection (3) for the facility for the portion of the preceding calendar year for which the facility was registered under section 3 of this regulation.

Offences and penalties

13 (1) An operator must not knowingly

(a) make or participate in, authorize or acquiesce in the making of a false or deceptive statement in a document made or filed under this regulation, or

(b) omit or authorize, or acquiesce in the omission of entries required by this regulation to be included in a document made or filed under this regulation.

(2) Contravention of subsection (1) is an offence punishable by a fine not exceeding $100 000.

(3) An operator who contravenes section 3 (1), (2) or (8), 4, 5, 6, 7, 8 (3), 9 (1), (2), (3), (4), (5), (6), or (8), 10, 11 (1) or 12 commits an offence punishable by a fine not exceeding $200 000.

(4) Each day an offence under subsection (3) continues constitutes a separate offence.

Schedule A — Baseline Inventory

Part I — Currents Metering

The following ocean currents metering information is required for registration.

The currents regime at the site must be characterized at 2 depths: approximately 15 metres below the surface and approximately 5 metres above the bottom. Current direction must be measured in degrees true and current speed in centimetres per second. Speed and direction must be recorded at least once every 30 minutes for a period of at least 30 days. The locations where currents are metered must represent currents within the tenure, especially near containment structures and containment structure arrays. Follow the protocols for collecting currents data that appear in Section 1 of Protocols for Marine Environmental Monitoring (WLAP 2002).

Part II — Baseline Monitoring

A. Seabed Characterization

A baseline survey of the seabed within the tenure and at at least 2 reference stations is required. The baseline survey must achieve the following objectives:

- describe variation in substrata, topography and bathymetry throughout the tenure and at reference stations
- locate reference stations with similar depths, substrata and other features
- determine the feasibility of collecting sediment grab samples and identify areas that need video survey for operational monitoring
- collect physical and biological data to compare with data collected during the operational period and to estimate the number of samples needed for operational monitoring.

Surveys of the probable footprints for all proposed locations of the containment structures, or containment structure arrays, are required. They must include enough transects to map all biophysical characteristics to a resolution of 50 metres. To describe depth variation, at least one transect must run perpendicular to the shore starting from the landward boundary of the tenure and running to its opposite perimeter.

B. Video Survey

Each reference station must have 2 video transects, each at least 100 metres long, including one perpendicular to shore. The transects must run straight, with start and end points recorded for future reference.

Surveys must characterize substratum types as bedrock, boulder (>256 millimetres in diameter), cobble (64-256 millimetres in diameter), gravel (2-64 millimetres in diameter), sand (0.0625-2 millimetres in diameter), silt, mud and clay (<0.0625 millimetres in diameter), or shell hash. For combination substrata, relative proportions must be noted (e.g. 50% bedrock: 50% boulder). Some will have associations of organisms or other features which must be identified.

In areas where sediment grab sampling is not possible, the abundances of megafauna, macrofauna and macrophytes must be measured. For megafauna, record moving images along transects. For macrofauna, take still images of quadrats. For macrophytes, use both. There must be enough quadrats to adequately represent each substratum type within all probable footprints. At reference stations, 5 quadrats must be sampled midway on the transects. All images, whether moving or still, must be clear enough for counting and measuring the biota cover. All biota must be taxonomically identified to at least the level of class.

Sediment colour and the presence or absence of fish feed, fish faeces, flocculent organic material, macrophytes, terrigenous material and farm litter must also be recorded for each transect and quadrat. These observations are needed for proper comparison with observations made during operational monitoring. Unique seabed features or areas of interest must also be mapped.

The baseline survey must follow the protocols for video surveys in section 2 of Protocols for Marine Environmental Monitoring (WLAP 2002) unless an alternative method has been authorized by the manager, and the alternative method will meet the objectives for the baseline survey set out at the beginning of this Part.

C. Sediment Sampling

Following conduct of the video or alternate survey, sediment grab sampling is required wherever physically possible.

Grab sampling obtains physical, chemical and biological data to be used to determine the number of samples needed for operational monitoring and to be compared against the operational data. Within each of the probable footprint or accumulated probable footprints a minimum of 3 grab samples must be taken for each sediment type and if only one sediment type is present, then a minimum of 5 grab samples must be taken. Two reference stations must be selected (as described for video surveys above) and at least 3 grabs must be taken at each reference station. Follow the sediment sampling protocols in Sections 3 and 4 of Protocols for Marine Environmental Monitoring (WLAP 2002).

The following physical and chemical parameters must be measured whenever a sediment grab sample is taken:

- free sulphides*
- redox potential*
- total volatile solids or total organic carbon
- sediment grain size (% gravel, sand, silt, mud and clay)
- total zinc (at sites where zinc is used in feed formulations)
- total copper (at sites where copper is used as an antifouling agent)
- other contaminants (if required by the manager) such as pesticides, therapeutic additives, therapeutants, pharmaceuticals, wood preservatives and persistent organic compounds
- other parameters if required by the manager.

* Follow the protocols for measuring free sulphides and redox potential in Sections 5 and 6 of Protocols for Marine Environmental Monitoring (WLAP 2002).

Record this additional information:

- sediment colour, odour and texture
- presence or absence of gas bubbles, Beggiatoa, fish feed, fish faeces, flocculent organic material, macrophytes, terrigenous material and farm litter.

Biota must be taxonomically identified to the level of species and counted. Also identify and count individuals of Capitella. After being processed, samples must be archived for at least 5 years. These samples must be properly stored and maintained.

Part III — Reporting

The location of each substratum type, currents metering, facility sampling stations, reference stations and transects must be reported on maps. Appropriate scale must be used for easy identification. Qualified professionals providing positional information must be aware that DGPS is not always available to adequate resolution (± 10 m) because of the topography of adjacent land or for other reasons. Therefore, alternative methods of positioning may be needed.

Another map must show depths across the tenure and at reference stations. Map contours must be at a maximum of 10-metre intervals (or equivalent intervals expressed in alternative units). Marine charts may be used, provided that they report the 10-metre depth interval and are accurate for the specific site. However, companies may choose to collect their own bottom contour information if accurate charts are not available, or to be consistent with other information, such as a profile view of the facility.

Data submissions for currents metering (at both depths) must include:

- electronic files of the raw data, indicating current speed and direction for each sampling interval
- hard copies of the summary data presented in tabular frequency distribution.

The data must be provided in an electronic ASCII or MS Excel file format. The data must also be accompanied by adequate reporting information as indicated below. The hard-copy summaries must show current speed and current direction.

Both raw data and summary data must include measurements made between the first and the last good record time only. All data recorded before or after complete deployment of the meter must be removed prior to submission.

Videotape submissions must be accompanied by a detailed narrative or written assessment prepared by a qualified professional describing benthic conditions along transects and in quadrats. The video and report must identify the location of each transect and the location of the camera along each transect.

All physical, chemical and biological data gathered from video surveys and sediment sampling must be submitted in a standard electronic format. Spreadsheet templates, available from WLAP, are to be used for submitting these data and other information. Each data submission must be accompanied by a statement indicating that these Schedules and the Protocols for Marine Environmental Monitoring (WLAP 2002) were followed. If there are any deviations from these, there must also be a written statement justifying the deviations.

Schedule B — Operational Monitoring

The main purposes of operational monitoring are to determine whether a facility meets chemical and biological requirements and standards, and to define the spatial and temporal extent of the facility's effects. All monitoring programs must have the basic study design features described in Section 7 and Appendices of Protocols for Marine Environmental Monitoring (WLAP 2002). Any additional design features must be provided by a qualified professional.

The probable footprint of the waste discharges must be determined prior to designing the impact study. Methods to estimate that footprint may include currents metering, video surveys, sonar techniques, reconnaissance grab sampling, hydrodynamic modeling or other methods.

Part I — Hard Bottom Survey

If satisfactory sediment samples cannot be obtained using grab samplers - because of hard surfaces, rocks or other coarse material - perform a video survey, or an alternative hard bottom survey if an alternative method is approved by a manager, of the footprint or accumulated footprints. Have it analyzed by a qualified professional as described in Schedule A following the methods described in Section 2 of Protocols for Marine Environmental Monitoring (WLAP 2002).

For video surveys, the following 2 types of video surveys must be conducted:

Megafauna transect survey

This identifies and quantifies megafauna and macrophytes from moving images obtained along transects. These transects may also be used to define the extent of observable physical and biological changes, such as sediment colour, presence of organic sediments, feed pellets, farm litter or Beggiatoa mats.

Macrofauna quadrat survey

This consists of still images of quadrats used to identify and quantify macrofauna and macrophytes. These are normally on or adjacent to the megafauna transect.

Each transect must start at the perimeter of the containment structure, or containment structure array, and extend to the perimeter of the tenure, along the prevailing current. There must be one transect for each of 2 dominant current directions of each containment structure or array. If adjacent containment structures, or arrays, are less than 60 m apart, they must be treated as if they were a single array when transects are positioned. A transect must not extend beneath an adjacent containment structure or array.

Alternate transect designs might be acceptable, provided that there is adequate supporting information to show that the transects represent the spatial extent and magnitude of effects, considering the tenure's currents regimes.

For each transect place at least 5 macrofauna quadrats at each of these stations: perimeter of containment structure or array, 30 metres from the zero metre stations and on the perimeter of the tenure.

At least 2 reference stations must be surveyed, with one transect at least 100 metres long at each. These must be the same reference stations as those surveyed during baseline inventory, or for existing sites, established for the Interim Monitoring Program 2000. In the absence of established sites documentation must be provided to show the reference sites meet the criteria in Section 2 B of Protocols for Marine Environmental Monitoring (WLAP 2002).

Data analyses must be performed according to the statistical protocols described in Section 7 of Protocols for Marine Environmental Monitoring (WLAP 2002) to determine whether the facility has had any statistically significant effects.

Part II — Sediment Sampling

Sediment sampling also requires a transect approach. Each transect must start at the perimeter of the containment structure, or containment structure array, and extend along the dominant currents to the perimeter of the tenure. There must be one transect for each of 2 dominant current directions for each containment structure or array. If adjacent containment structures, or arrays, are less than 60 m apart, they must be treated as if they were a single array when transects are positioned. A transect must not extend beneath an adjacent containment structure or array.

Each transect must have sampling stations located at the perimeter of the containment structure at 30 metres from the zero metre station and at the tenure perimeter. A zero metre station must be established for each transect. Each 30 metre station must be located along the dominant current using DGPS.

Alternate transect designs might be acceptable, provided that there is adequate supporting information to show that the transects represent the spatial extent and magnitude of effects, considering the tenure's currents regime(s). Two or more reference stations must be sampled at the same locations as those surveyed for baseline inventory, or for existing sites, established for the Interim Monitoring Program

2000. In the absence of established sites documentation must be provided to show the reference sites meet the criteria in Section 2 B of Protocols for Marine Environmental Monitoring (WLAP 2002).

The following physical and chemical parameters must be measured at the perimeter of containment structures, or of containment structure arrays and at reference stations during operational monitoring:

- free sulphides*
- redox potential*
- total volatile solids or total organic carbon
- sediment grain size (% gravel, sand, silt, mud or clay)
- total zinc (at sites where zinc is used in feed formulations)
- total copper (at sites where copper has been used as an antifouling agent)
- other contaminants (if required by the manager) such as pesticides, therapeutic additives, therapeutants, pharmaceuticals, wood preservatives and persistent organic compounds
- other parameters if required by the manager.

* There are specific protocols for measuring free sulphides and redox potential. Follow all sediment sampling protocols in Sections 3, 4, 5 and 6 of Protocols for Marine Environmental Monitoring (WLAP 2002).

Free sulphide and redox potential monitoring must be also conducted at stations at 30 metres from the zero metre station, and at the perimeter of the tenure.

A minimum of 3 grab samples must be taken at each station. If the mean free sulphide concentration of the 3 grabs at a given facility station exceeds a requirement or standard (not statistically), then 2 additional grabs must be taken for sulphides and redox potential.

Where biological sediment samples are needed, the abundance of infauna and epifauna must be quantified. Within the tenure, at least 5 sediment grabs are needed for each station. At each reference station, at least 3 grabs are needed. Biota must be taxonomically identified to at least the level of family. Also identify individuals of Capitella. After processing, samples must be archived for at least 5 years. These samples need to be properly stored and maintained.

Perform data analyses according to the protocols described in Section 7 of Protocols for Marine Environmental Monitoring (WLAP 2002) to determine whether the facility has had any statistically significant effects.

Part III — Reporting

Reporting must be carried out in the same manner and to the same extent as set out in Part III of Schedule A.

Note: this regulation replaces B.C. Reg. 470/88

[Provisions of the *Waste Management Act*, R.S.B.C. 1996, c. 482, relevant to the enactment of this regulation: section 57]

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Procedure for Oral Hearings concerning Licence Sanctions under the British Columbia *Fisheries Act* (sections 18 & 19)

All proceedings under sections 18 or 19 of the British Columbia *Fisheries Act* must follow the rules of administrative fairness. Most importantly, the licensee or applicant (the "Licensee") must be told of the case against them and given the opportunity to respond to it.

Even though section 18 of the British Columbia *Fisheries Act* only requires a hearing if the licensee requests one and section 19 is silent about hearings, the better approach in all cases in which licence privileges are in jeopardy under section 18 or section 19 is to proceed by way of hearing, with notice to the Licensee.

If a Fisheries Inspector or Aquaculture Inspector believes a licence suspension or revocation under section 18 of the British Columbia *Fisheries Act* may be warranted, they should provide a copy of an investigation report to the Chief Inspector and the Manager, Licensing and Compliance Branch (the "Manager").

If a Fisheries Inspector or Aquaculture Inspector believes the past conduct of a person or company warrants refusal of licence renewal under section 19 of the British Columbia *Fisheries Act*, they should consult with the Chief Inspector and the Manager.

In either case, if the Manager believes that the allegations can be proven on a balance of probabilities, the Manager should refer the matter to the Minister or Deputy Minister as the Decision-maker. The Manager should specify what action the Manager wishes the Decision-Maker to take and provide the Decision-maker with allegations (the less detail the better) sufficient to persuade the Decision-maker to convene a hearing.

If the Decision-maker does not elect to convene a hearing, the Manager should consider any other actions available in the circumstances.

If the Decision-maker elects to proceed by way of oral hearing in determining whether to suspend, revoke, or refuse to reissue a licence under the British Columbia *Fisheries Act*, the following procedure applies:

1. The Decision-maker should give written notice of the hearing to the subject Licensee and send a copy of that notice to the person who will present the case (the "Presenter") for the provincial government (the "Government") and against the Licensee at the hearing. The Decision-maker should ensure that the Licensee receives the notice at least 45 days in advance of the proposed hearing date. The notice should contain the following:

1.1. notice of the Decision-maker's intent to conduct a hearing on a specified date to determine whether to suspend, revoke, or refuse to reissue, as applicable, the Licensee's identified licence. The notice should make it clear that the hearing may proceed even if the Licensee does not attend.

1.2. the allegations made by the Presenter against the Licensee.

1.3. a reminder that at the hearing the Licensee may be represented by counsel.

1.4. the name, address, telephone number and fax number of the Presenter and a request to the Presenter, by copy of the notice, to supply the Licensee with details of the allegations.

1.5. a copy of the British Columbia *Fisheries Act* and these procedures.

2. The Decision-maker may set a new hearing date on receipt of a reasonable request for adjournment or if the Decision-maker during the course of a hearing requires additional information.

3. The Manager should arrange for a Presenter to make the case for the Government. This may be a lawyer, Fisheries Inspector, Aquaculture Inspector, or other official from the Government.

4. The Presenter should disclose all relevant documents to the Licensee at least 20 days before the hearing. "Documents" include correspondence, compliance inspection reports, articles, photographs, maps, charts and any other materials such as legislation, policies, or case law that the Presenter plans to present, refer to, or rely on at the hearing.

5. The Presenter should disclose to the Licensee at the same time as all relevant documents a list of witnesses to be called by the Presenter at the hearing.

6. The Presenter should provide three copies of all relevant documents at the time and place of the hearing so that there is one copy available to be entered as a formal exhibit, one copy for the Decision-maker, and one copy for the Licensee.

7. The Decision-maker should arrange to hold a hearing in a community or place most convenient to the Presenter and the Licensee and in a room of sufficient size and in such a way that:

7.1. the Decision-maker is seated at a table facing both participants.

7.2. the Presenter is seated at a table facing the Decision-maker.

7.3. the Licensee is seated at a table facing the Decision-maker.

7.4. there is a table with seating for any witnesses.

7.5. there is seating in the room for a reasonable number of other interested persons, unless the Decision-maker exercises his or her discretion to conduct a closed hearing.

8. The Decision-maker should arrange for the following:

8.1. the means to create a permanent audio recording of the hearing.

8.2. counsel for the Decision-maker, if the Decision-maker wishes.

9. The Decision-maker should commence the hearing as follows:

9.1. declare that the hearing has started.

9.2. introduce himself or herself and his or her counsel, if applicable.

9.3. ask the Presenter and the Licensee or person representing the Licensee to introduce themselves.

9.4. ask that all statements be made to the Decision-maker (unless a participant is asking questions of a witness), with only one person speaking at a time.

9.5. ask the Presenter and the Licensee in turn to specify the order they are seeking, the names of their witnesses and to estimate how long their case will take.

10. The Decision-maker should then consider advising the participants of the following, as applicable:

10.1. the statutory authority for the Decision-maker to hold the hearing.

10.2. the swearing or affirming of witnesses is required.

10.3. the participants are free to call witnesses or enter documents, subject to rulings on their relevance.

10.4. all documents, if entered, will be recorded with individual exhibit numbers.

10.5. the Presenter will be called upon first.

10.6. once the case for the Government is complete, the Licensee or Licensee's representative will be heard.

10.7. at the conclusion of the direct examination of each witness, the other participant may cross-examine that witness.

10.8. the Decision-maker may also question a witness at any time, but should wait until after cross-examination is finished in most cases.

10.9. on the request of a participant or on the Decision-maker's initiative, a witness may be requested to wait outside the hearing room prior to giving his or her evidence.

10.10. except with leave of the Decision-maker, once a participant's case is made there will be no other opportunity to call evidence.

10.11. except with leave of the Decision-maker, once a witness has stood down there will be no further opportunity to question that witness.

10.12. after presenting evidence, the Presenter will be first to make argument, followed by the Licensee.

11. The Decision-maker should then hear the case. The following procedural sequence should be followed:

11.1. Government's case

11.1.1. opening remarks, if any.

11.1.2. witnesses:

11.1.2.1. swear or affirm to tell the truth.

11.1.2.2. examination by Presenter.

11.1.2.3. cross-examination by Licensee or representative.

11.1.2.4. any final questions from the Decision-maker.

11.1.2.5. re-examination by Presenter, if applicable (only on points arising out of cross-examination or from Decision-maker's questions).

11.2. Licensee's case

11.2.1. opening remarks, if any.

11.2.2. witnesses:

11.2.2.1. swear or affirm to tell the truth.

11.2.2.2. examination by the Licensee or representative.

11.2.2.3. cross-examination by the Presenter.

11.2.2.4. any final questions from the Decision-maker.

11.2.2.5. re-examination by the Licensee or representative, if applicable (only on points arising out of cross-examination or from the Decision-maker's questions).

11.3. Government's argument.

11.4. Licensee's argument.

12. The Decision-maker is not bound to follow the rules of evidence used in courts.

13. The Decision-maker is not bound by his or her previous decisions or the decisions of other administrative agencies. Each case should be decided on its own merits.

14. Hearings will normally be open to the public. The Decision-maker may, however, exercise his or her discretion to conduct a closed hearing if he or she considers it appropriate.

15. When the hearing is concluded, the Decision-maker may announce his or her decision immediately or may reserve.

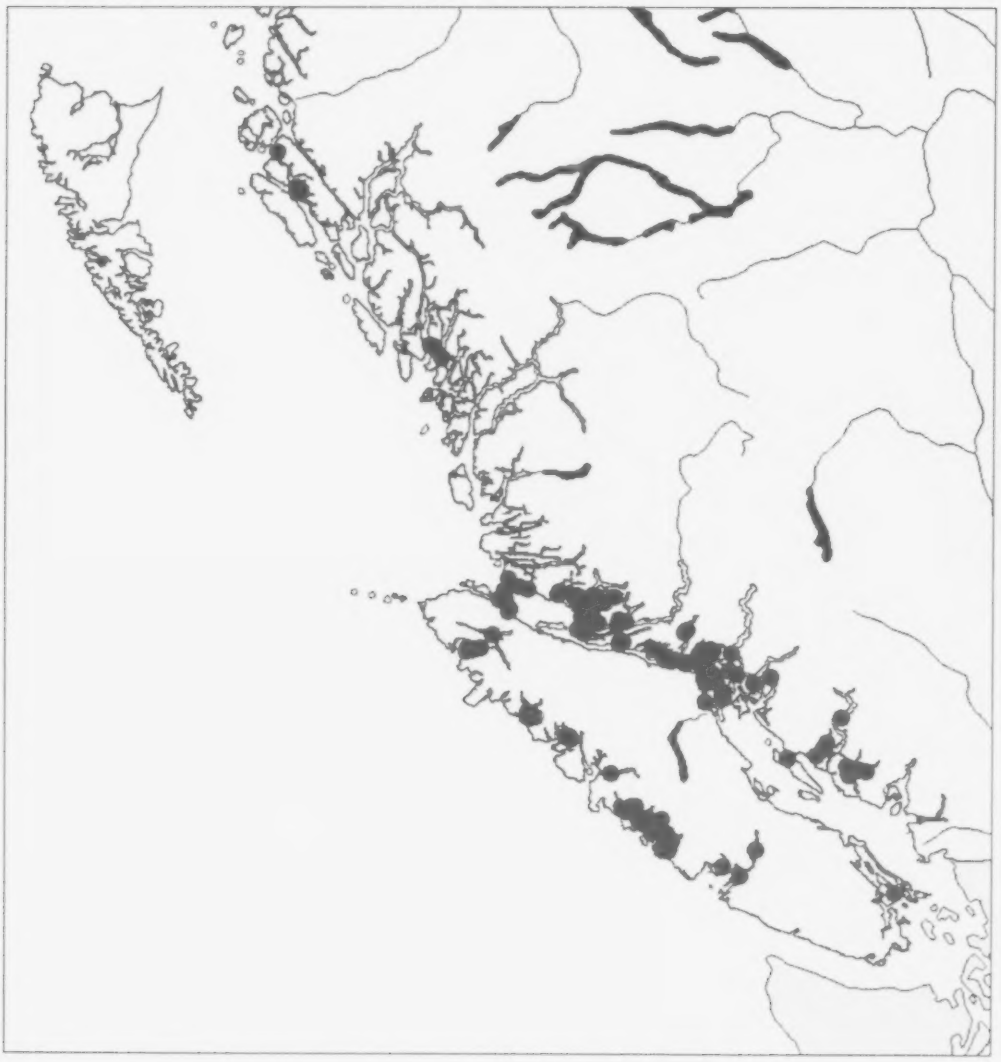
16. The Decision-maker should provide the participants with written reasons for his or her decision. The Decision-maker is encouraged to do this in a timely way.

17. If a Licensee does not appear at a hearing, but service of the notice of hearing is established, the Decision-maker may hold the hearing in the Licensee's absence.

Approved by:

Gordon Macatee
Deputy Minister
Ministry of Agriculture, Food and Fisheries

Date: Oct 2/2002



Map of British Columbia showing distribution of marine based salmon farms.

APPENDIX 16

SUMMARY RESULTS OF 2003 DIVE AUDITS

Dive Audit Number 1:

Company	Target Marine
MAFF reference number	412
Location of survey	Gustafson Bay in Salmon Inlet.
Lat./long.	49' 38.870 N 123'43.469 W
Date of survey	March 10, 2003
Start/finish dive time	12:48 to 15:25
Weather	Overcast with light rain
Visibility	Range between 10 and 30 feet
Current velocity	Less than 1 knot

Type of Pen System:

This site had a total of 12 pens, each measuring 60 by 60 feet hanging to a depth of approximately 65 to 70 feet. All the pens were supported by steel walk ways and stanchions. Shark guards were attached to the bottom of each net cage, predator nets were not used.

Summary of Findings:

1) The net weighting system was well designed but the operator should review the amount of weight in use. The system may benefit with the use of heavier weights.

2) Lines securing the shark guard to the net weights could be more secure.

3) Extra unused weights should be removed to avoid chance of entanglement.

4) Some lines were noted having excessive growth that could cause excessive drag in high current situations.

5) In some cases net repairs should be reviewed. Large repairs that bunch nets together might be the cause of uneven stress on the nets and should only be viewed as temporary until a proper fix can be achieved.

6) The company should review the internal net weighting system to ensure they are at the correct depth for efficient use.

7) Heavier external weights might provide better separation between the containment nets and shark guards.

8) Several lengths of chain protrude from the main anchors and care should be taken when tying lines between links to avoid chafing or pinching the line.

9) A survey of the main anchoring system indicates that some of the mollies holding shackle pins from turning were missing. These should be replaced.

Dive Audit Number 2:

Company	Marine Harvest
MAFF reference number	137
Location of survey	Conville Bay in Hoskyn Channel
Lat./Long.	50' 10.835 N 125'08.955 W
Date of survey	March 11, 2003
Start/finish dive time	10:10 to 11:58
Weather	Overcast with light rain
Visibility	Up to 25 feet
Current velocity	Less than 1 knot

Type of Pen System:

This site consists of eight 50 by 50 foot containment pens. All pens surveyed had shark guards and each pen was surrounded by a predator net.

Conville Bay relies primarily on an external net weighting system that secures both the containment and predator nets.

Summary of Findings:

1) Excessive unused shackles attached to net wets should be removed to reduce the risk of entanglement.

2) Ties off lines that are not in use should be removed from the shackles.

Dive Audit Number 3:

Company	Heritage Aquaculture
MAFF reference number	1070
Location of survey	Mactush Bay in Port Alberni Inlet
Lat./Long.	49' 13.479 N 124'81.333 W
Date of survey	March 17, 2003
Start/finish dive time	10:56 to 14:06
Weather	Overcast with light rain
Visibility	Up to 30 feet
Current velocity	Less than 1 knot

Type of Pen System:

Mactush Bay site is made up of eleven 100 by 100 and four 50 by 50 foot pens, all approximately 50 feet deep. All pens had shark guards in place and as well there was a predator net surrounding the entire system.

The net weighting system used at Mactush Bay relied in part on an external weighting system that stabilized both the containment net and predator netting system. Lines

were rigged so that net tension could be adjusted from the surface as required. Internal weights were also used.

Summary of Findings:

1. Garbage cans filled with concrete and used as main anchors had sharp edges that could potentially snag and cause damage to the containment netting.

2. In some cases several lengths of chain protrude from main anchors. In these circumstances care should be taken when tying lines between links to avoid chafing or pinching the line.

3. Lines securing pens to weights and each other should be properly tied.

4. The company should review their weighting system to ensure that the weights are at optimum level to correctly support both the containment net and shark guard. In some cases there may not be the desired separation between predator and containment nets.

5. Repairs underwater should be reviewed. Large holes that are bunched up and tied off can unduly stress the surrounding mesh resulting in easier tears. Such temporary repairs might cause uneven stress on the nets and should be properly fixed as soon as possible.

Dive Audit Number 4:

Company	Omega Salmon Group
MAFF reference number	1351
Location of survey	Marsh Bay east of Port Hardy – Broughton area
Lat./Long.	50'90.652 N 127'33.932W
Date of survey	March 27, 2003
Start/finish dive time	11:30 to 16:04
Weather	Overcast with sunny breaks
Visibility	Up to 30 feet
Current velocity	Less than 1 knot

Type of Pen System:

Omega's fish farm in Marsh Bay is made up of 3 Ocean Pro systems. The first system had six 75 foot square pens and the other two are approximately 160 by 75 feet. Shark guards were present on some cages and a predator net completely encircled each separate system.

The weighting configuration at Marsh Bay consisted of 8 inch steel pipes bolted together in a grid system hanging below the net cages. The predator net's lower rib line is tied to this gird and holds the net down and away form the fish pens. The lower rib lines of the pens are also tied to the same system.

Summary of Findings:

1) Lugs that are welded on the pipe for tie off points should be placed so they do not interfere with the webbing.

2) Zincs and other hardware should be bolted on facing away from the netting so there is less chance of entanglement.

3) Some of the lines could be more tightly secured to ensure proper and even tension on the containment net.

4) Broken lines or lines that are not being used should be removed from the weighting system.

5) The company should review their weighting system to ensure the most efficient use of weights and tie off points have been used.

6) Debris was found inside the predator netting that should be removed and the operator should review the need to construct a system to prevent the further accumulation of debris.

7) The predator nets should be reviewed for integrity as there were a sufficient number and size of holes present that might compromise the effectiveness of the net as a predator deterrent.

Dive Audit Number 5:

Company	Omega Pacific
MAFF reference number	270
Location of survey	Jane Bay, West Coast Vancouver Island
Lat./Long.	49' 00.332 N 125' 15.710W
Date of survey	March 31, 2003
Start/finish dive time	12:40 to 15:33
Weather	Overcast, light rain with sunny breaks
Visibility	Up to 30 feet
Current velocity	Less than 1 knot

Type of Pen System

Omega Pacific's Jane Bay fish farm is made up of 10 older style polar circles. There are predator nets that hang to approximately 90 feet while the containment net ranges between 55 and 70 feet deep.

There are no external weights on this system relying instead on an internal weighting system.

Summary of Findings:

1) Underwater net repairs should be reviewed. Large holes that are bunched up and tied off can cause uneven stress on the mesh resulting in easier tears. Temporary repairs should be properly fixed as soon as possible.